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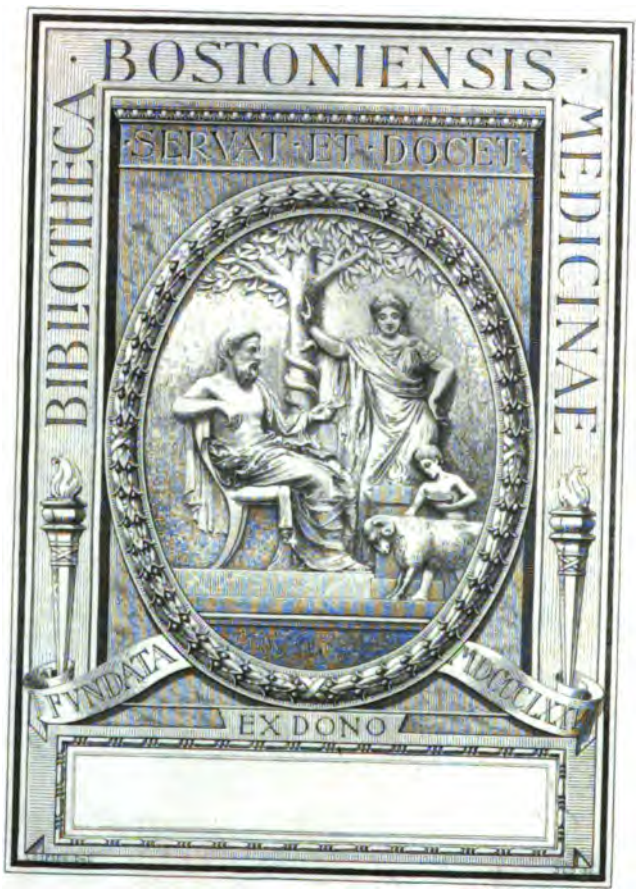
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OF

PRACTICAL MEDICINE

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Announcement

THE INTERNAL SECRETIONS AS THE BASIS OF IMMUNITY AND RATIONAL THERAPEUTICS

A PROMINENT and eminently practical clinician wrote a few months ago "If I were asked to define the wisest policy for the every-day person who wishes to keep well and *to avoid dying,* I would say: *Stay away from the doctors as long as you can;* use medicines only when they are necessary, and above all, when attacked by any bodily affliction, give Nature every possible chance to assist in a cure." This is a fair sample of the ignominy into which therapeutics has fallen in the year 1906, and it now becomes a question whether the practice of medicine can under such conditions be regarded as a laudable occupation—one, in fact, compatible with the dictates of an honest man's conscience.

To deny the truth of this clinician's conclusion—in the light of prevailing doctrines as to the action of drugs—is merely to shirk the responsibility it involves. It is not many years (1900) since Llewellyn F. Barker, Osler's successor at Johns Hopkins, wrote: "In spite of the extraordinary keenness of diagnostic power which has been developed in internal medicine, the painfully exact studies in pathological histology and in physiological and pathological chemistry, the wide-spread activity in pharmacological and pharmacodynamical experiment, and the indefatigable efforts of the manufacturing chemist to supply new drugs, the view is prevalent, and rightly so, that in the treatment of internal diseases we have more to hope for the future than to entrust to the present." Referring to Skoda's dictum, "We can diagnose disease, describe it and get a grasp of it, but *we dare not expect by any means to cure it,*" he adds: "In such a temper *drugs of unknown physiological action* cannot conscientiously be set to act upon bodily tissue in disease in which we are *ignorant of deviations from the normal* of the chemical and physical processes *going on in the cells.* The death-blow came first to polypharmacy; today, with many, pharmacotherapy, as a whole, is almost moribund."

The six years that have elapsed since these lines were written have evidently sealed the fate of therapeutics. The president of the American Medical Association for 1903, Dr. Billings, stated in his address: "Drugs, with the

exception of quinine in malaria and mercury in syphilis, are valueless as cures." Dr. Musser, his successor, wrote, two years later (1905): "One can see less and less of the use of drugs"—all normal preludes to the declaration of the first author quoted (1906): "To avoid dying . . . . stay away from the doctors as long as you can!"

To him who feels at all; to the family physician who understands the closeness of the ties that unite him to those who appeal to him during hours of trial, suffering, and danger, no declaration could be more distressing. It blights his noblest ideals, and relegates his profession to the quagmire of a questionable makeshift.

Four years ago this month, the writer, impressed by the trend of thought in this direction, and particularly by what a reviewer recently characterized as "Osler's black, hopeless, helpless, therapeutic pessimism"—quite warranted, as shown above—submitted in his first volume of "Internal Secretions" with due reserve, what he thought might open a path to a more fruitful arbor. He suggested that several organs *known* to be endowed with some function undetermined by the laboratory investigators, might play a leading rôle in the pathogenesis of disease and the physiological action of remedies. He submitted considerable evidence to the effect that the organs referred to were the foundation of the immunizing processes of the organism and that *through these organs, by means of our drugs, we could govern the protective resources of the body—the vis medicatrix naturæ.*

Now, much has been made of late—and rightly, too—of Sir A. E. Wright's researches upon the rôle of the "opsonins." Nearly three years ago (British Medical Journal, March 17, 1904), in an address before the Chelsea Clinical Society, of London, this distinguished pathologist stated that *while their origin in the body was unknown,* "all the protective substances which were involved in the cure of disease were to be regarded as produced by internal secretions." Alluding to various disorders, including tuberculosis, he held that if "the laws by which such substances were produced were known," we could "call forth a production of those substances" in the patient. In all of some thirty cases—boils, acne, and sycosis—which the lecturer had treated by inoculations "there had not been one of them in which there had not been produced enough of that internal secretion to enable the body to kill off the staphylococcus," while "patients with tuberculosis recovered if they produced enough of the internal secretion to render their bodies uninhabitable by the tubercle bacillus." He held, moreover, that "it should be recognized that chronic or local infection was a symptom of defective internal secretions, and that those secretions could be elaborated in the body, when there was youth, strength, and health, by the application of the *appropriate stimulus given in proper quantities.*" The identity and source of these "internal secretions" were then and have remained unknown.

Fifteen months before the above lines were published, the writer of the present article, in "Internal Secretions" and elsewhere, had pointed out that the blood's immunizing bodies were the products of the ductless glands, formulating the general principle that "the power of the organism to antagonize

the constitutional effects of pathogenic germs, their toxins and other poisons, is directly proportionate to the functional efficiency of the adrenal system," and instanced vaccination, tuberculin injections, Coley's toxin method, etc., as measures which caused the secretory organs of this system, the adrenals and thyroid and those influenced by them, the pancreas, the spleen, and the leucocytogenic organs, to markedly increase the bacteriolytic and antitoxic powers of the blood. *Dr. Wright's experimental work confirms, therefore, the writer's conclusions* in so far as the power of external agents to provoke an increase of internal secretions in the blood is concerned. The writer had shown, moreover, that toxins were not alone to cause this increase of protective substances in the blood-stream, but that agents devoid of the dangers of toxins did it likewise, *i.e., agents available in our pharmacopœia, our remedies.*

The writer can claim, therefore, that four years ago, in the first volume of "Internal Secretions," he laid the foundation of *rational therapeutics, i.e., therapeutics based on immunity.* He can make this statement not only owing to the powerful evidence which he owes to Dr. Wright's labors, but because he has devoted the last four years to researches which have sustained and greatly developed his views and demonstrated beyond cavil their practical worth.

The second volume of "Internal Secretions," in which these researches are embodied, is now in press, and the writer does not hesitate to state that it will justify the statement that *there is no ground whatever for any loss of faith in our powers to relieve suffering and to stay the hand of death.* Never have our resources—arrayed in new garments—been so great, our modes of investigation so refined, our insight into disease keener. Never, therefore, has the unbounded confidence which the family physician still enjoys at every hearth rested on a stauncher foundation.

To keep in touch with the profession in this connection, the writer will inaugurate in the present issue of the Monthly Cyclopædia a series of special articles in which he will present his interpretation of questions that are now obscure, and upon which the functions of the ductless glands throw considerable light. Although the articles will eventually bear only upon the essentially practical phases of Medicine, it will be necessary to review in outline, at first, the physiological functions of the organs referred to, in order to afford the reader a foundation for the practical questions to be treated later on.

The first paper refers to a question of paramount importance in all problems relating to the human organism, *i.e.,* that of oxygenation. The reader may be surprised to learn that this leading function is still obscure, notwithstanding the great amount of labor bestowed upon it by physiologists. This entails a corresponding lack of knowledge as to the intimate processes in the tissue cells—the *life process itself.* Indeed, Sir Michael Foster closes a chapter on metabolism in the last edition of his well-known text-book, with the remark that after all it "consists mostly of guesses and gaps."

This in itself indicates how overwhelmingly important in pathogenesis and therapeutics are the internal secretions, since they *alone* afford a solid explanation of oxygenation and tissue metabolism which jointly form the pedestal upon which the entire fabric of Medicine rests.

C. E. DE M. SAJOUS.

Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

CLINICAL CONDITIONS CAUSED BY DISTURBANCES OF THE THYROID GLAND

By OLIVER T. OSBORNE, M.A., M.D.

NEW HAVEN, CONN.

Professor of Materia Medica, Therapeutics, and Clinical Medicine at Yale.

THE symptoms caused by disturbances of thyroid secretion, as seen in the conditions of myxœdema and cretinism, are well recognized. The symptoms of Graves' thyroid disease, which are largely due to excessive thyroid secretion, and which can all be developed by the overfeeding of thyroid extract, are also well understood. I do not believe, however, that it is sufficiently well recognized that all sorts of disturbances of thyroid secretion, qualitative as well as quantitative, may and do give symptoms.

Any gland, and doubtless the thyroid, may furnish, by some perversion of its chemistry, a secretion that, though normal in its gross constituents, may be abnormal in its finer chemical structure. To be more explicit, *all varying increased secretions of this gland will give symptoms, and all varying decreased secretions will give symptoms.* Given a fully developed exophthalmic goiter, with all of the attending symptoms at the top of the line, and with normal secretion and function in the center of the line, there may be all variations of tachycardia, hot flashes, profuse sweatings, nervous irritability, restlessness, loss of weight, profuse menstruation, neurotic tendencies, and hysterical phenomena of all kinds; while at the bottom of the line, at equal distance below normal as is the exophthalmic goiter above, is myxœdema; and between the center of equilibrium and myxœdema are such conditions as connective tissue formations, arteriosclerosis, slow heart, high blood-tension, obesity, diminished menstruation, toxæmias as seen in uræmia, and probably some blood disturbances.

The thyroid gland is easily excited temporarily to increased secretion by emotion, grief, sexual excitement, and for a more prolonged period during menstruation and pregnancy. It is thus seen that the thyroid is a much more active and necessary gland in women than in men, and, in fact, nearly three-fourths of all cases of disturbed thyroid secretion, either more or less than normal, occur in women. The nervous, excitable, irritable girl at puberty is so because this gland is in an unstable condition. It is often either overdoing or underdoing its normal functions. The profuse menstruation of young girls is largely due to excessive activity of this gland, whereas under-

activity of it gives amenorrhœa and often chlorosis, and many times chlorosis is as successfully treated with small doses of thyroid as with iron, while in amenorrhœa nothing in the whole pharmacopœia is, in my opinion, at all comparable to the action of thyroid. On the other hand, in these girls with profuse menstruation I have often found mammary extract very efficient in combatting the flow, and physiologically when the mammary gland is functionally active menstruation is generally in abeyance.

Again, this emotional gland is oversecreting in various hysterical manifestations in women, and is largely the cause of the nervous wrecks we see from excessive venery in young women, and its enlargement may have something to do with the typical hoarse voice. Later, this gland, if overworked, like any other overworked organ of the body, is prone to decreased activity and becomes atrophied, largely due to connective tissue formation, when the symptoms of undersecretion develop, more evident in women than in men, as evidenced by almost always the laying on of fat after the menopause. The thyroid has been found degenerated in adiposis dolorosa, and I have benefited such cases by giving thyroid.

As age advances, from fifty on, the thyroid normally begins to secrete less than at earlier ages. Vasomotor tension therefore increases, arteriosclerosis develops, and we have normal old age, viz., arterial disease, and with it all the phenomena of connective tissue deposits. Finally, as the gland more and more diminishes its secretion, senility develops, the skin becomes dry, and eczemas may occur; and these eczemas are improved by the administration of thyroid. The nervous excitability of our present lives leads to overstimulation of the thyroid, and with nervous tension, strain, and alertness, causes men to have arteriosclerosis and its phenomena earlier than formerly.

One more fact must be taken into consideration, viz., that any gland may have its chemistry so disturbed as to offer a perverted secretion, perhaps neither too much nor too little as a whole, but with its various elements in an abnormal relation to each other. This is doubtless the reason that in some cases of hæmophilia thyroid-feeding has been successful and in other cases it has made the condition worse.

The thyroid, I believe, has something to do with the production and destruction of the red blood-corpuscles. I have seen cases of chlorotic anæmia have their blood-counts improved under thyroid. I have seen cases of epistaxis and uterine hæmorrhages in stout, over-weight women, with slow pulse, have this bleeding stopped by thyroid. On the other hand, thyroid, as above stated, will make stout, over-weight women who have amenorrhœa menstruate, and thyroid will make normal women menstruate more profusely.

The thyroid also has something to do with sugar metabolism. Glucose has many times appeared in the urine when thyroid treatment has been pushed, and I have seen cases of diabetes have the sugar output greatly increased under thyroid treatment. Myxœdema has often been complicated with diabetes, and diabetes has often been an accompaniment of acromegaly, in which disease the thyroid is always abnormal. Cretins have developed diabetes under thyroid treatment.

Besides the physiologic and psychic stimulations of the thyroid gland, certain drugs affect it. Alcohol excites it, and iodine in any form is a stimulant to it. Arsenic I believe to be a stimulant to it, and this is perhaps the reason that arsenic does good in chlorosis. Phosphorus is probably a stimulant to it. Prolonged actions of such metals as lead and mercury, I think, inhibit the action of the thyroid. This is doubtless one of the causes of the connective tissue formations which can occur (due to diminished thyroid secretion) as the sequelæ of a long-previous mercury-treated syphilis. Quite possibly some of the efficiency of the iodides in syphilis is due not only to the liberation of mercury from the tissues, and perhaps thus to remercurialize the patient, but also to the stimulant action of iodine on the thyroid gland. Other drugs which I believe diminish the secretion of the thyroid are strophanthus, bromides, atropine, and lime, as perhaps best administered in the glycerophosphates.

An excessive meat diet modifies the structure, and hence the secretion of the thyroid. This has been noted by Watson (New York and Philadelphia Medical Journal, May 6, 1905), and I believe is a fact. Certainly, when there is much hypersecretion in exophthalmic goiter, the patient is much better on a diet without meat.

If the above clinical conditions are caused either in whole or in part by disturbances of the thyroid secretion, it emphasizes the care which we should take in prescribing thyroid extract. I am convinced that much harm has been done by ordering too large doses or giving thyroid extract in cases where the patient was already having too much of that secretion. A patient on the verge of Graves's disease can be caused to have it by giving thyroid for a shorter or longer period. Also it should be remembered that the amount of thyroid secretion furnished to the blood during twenty-four hours is very small, and to satisfy a slight deficiency of it requires but a small dose a day, probably represented by about twenty centigrams (three grains) of the thyroid powder as obtained under the pharmacopœial name of glandulæ

thyroideæ siccæ. However, I do not find every preparation of thyroid to be equally active.

Too much thyroid is administered if it produces palpitation, nervousness, restlessness, insomnia, and loss of weight, unless the latter is what is desired.

PARESIS

By F. W. LANGDON, M.D.

CINCINNATI.

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This remarkable and increasingly frequent disease, unique amongst those classed as "insanities" by reason of presenting an unmistakable clinical history, a definite pathology and morbid anatomy, a fairly fixed duration in time, and an almost invariably fatal outcome, has nevertheless remained an enigma as regards its causation, notwithstanding the fact of its recognition as a clinical entity for three-quarters of a century.

Its alleged causes—which may be summed up as "civilization and syphilization" or "wine, women, and worry"—are, to the thoughtful, merely convenient alliterations, which have served to occupy, but have never filled, the hiatus in our knowledge of its actual cause.

That the disease may develop in the non-syphilitic and the non-alcoholic is admitted. The same is true of the alleged sexual and intellectual causes. Heredity is a factor of small importance, smaller than in any other well-marked psychosis.

Regularity in evolution, cause, duration, and outcome; unvarying pathologic processes, constancy in morbid anatomy, wide-spread general symptomatology in addition to its psychic features, would all naturally suggest a definite specific cause for any disease—an invasion of the organism by a persistent enemy, and this, in fact, is the direction in which recent investigations seem to lead.

While able investigators in many lands have sought to penetrate the mystery of the actual causation of paresis, the investigations of none have seemed to the writer so important, as regards completeness of technic, fruitfulness in actual results attained, and promise of future usefulness, as those of Dr. W. Ford Robertson,* pathologist to the Scottish Asylums. His conclusions are:—.

* The Pathology of General Paralysis of the Insane (the Morrison Lectures for 1906), Review of Neurology and Psychiatry, Edinburgh, February, March, April, 1906.

(1) Paresis is caused by a wide-spread infection of the organism by a specific bacillus—Bacillus paralyticans.

(2) The organism belongs to the "diptheroid" group, but is, nevertheless, distinct from the Klebs-Loeffler bacillus of diphtheria. It is observed in two forms: (*a*) as single individuals irregularly disposed; (*b*) as a filamentous or thread form.

(3) The bacillus gains entrance to the system by way of the alimentary and respiratory tracts chiefly.

(4) Syphilis, alcoholism, dissipation, etc., are merely factors in breaking down the general defences against the bacterial invasion.

(5) The invasion of the blood, lymph, and tissues generally by the bacillus gives rise to the production of toxins, to which are due the various degenerative, convulsive, and paralytic features of the disease. The "remissions" so characteristic of the disease are accounted for by the "lysogenic action" of the blood, which inhibits the proliferation of the bacilli from time to time. The bacillus was found in abundance—widely distributed—in twenty consecutive cases of *paresis*, and in the centrifugated deposit from the urine in seven consecutive cases of *tabes dorsalis*. The questions, whether paresis is tabes of the brain or tabes is paresis of the cord, seems likely to be answered, in view of these findings. In control cases the bacillus was not found. Rats fed on pure culture of the bacillus died after two months, with paralytic and stuporous symptoms; and histological examination revealed some of the important lesions of paresis. The conclusions of Robertson have been confirmed, in a measure, by investigators in America, and researches are progressing in various laboratories. As regards the practical outcome of these researches, it is evident that they point the way to certainty of diagnosis in both paresis and tabes at a much earlier period than is now possible.

In logical sequence to the ascertainment of a cause comes the search for a remedy. The rational indications point to serumtherapy as the outcome, and investigations are now taking that direction. The outlook appears at least hopeful. At present it would appear that early diagnosis is more important than ever; and that *the pathognomonic element* of early diagnosis in doubtful cases, lies in the detection of the *bacillus paralyticans*. This may be conveniently searched for clinically in the centrifugated deposit from the urine or in the cerebro-spinal fluid obtained by lumbar puncture.

FOUL BREATH*.

By CHARLES D. AARON, M.D.

DETROIT.

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One of the most frequent conditions for which the general practitioner is consulted is that of foul breath. It is an annoying and distressing symptom. When once the fact is known, the thought to the patient is so harrassing that it is sometimes conducive to depression, hypochondriasis, and melancholia. Normally, expired air is perfectly odorless. A pathologic condition can change this from an offensive or foul odor to that which actually takes the characteristic of fæcal. There are times that food or drink so adheres to the buccal cavity that the expired air for some hours imparts an odor that enables us to say just the kinds of food and drink that have been taken. The pathologic processes which may cause foul breath are varied and many. The most frequent are the affections of the organs of digestion, respiration and metabolism.

With the affections of the digestive tract, the condition of the teeth naturally commands our first consideration. Dental caries, periostitis, pyorrhœa alveolaris, and deposits of tartar may all cause foul breath. Retention of food-remnants between the teeth or any irregularity or malposition of the teeth that favors the retention of food that undergoes disintegration is frequently responsible for foul breath. As a matter of fact, deficient brushing and cleaning of the teeth and the mouth generally may be the cause of the bad odor. The odor, under these conditions, is due to putrefactive processes. Few realize the dangers of not properly cleansing the buccal cavity, and still fewer take advantage of the ease with which this can be done. The mouth is an excellent incubator for microörganisms. Millions of germs are found in the mouth, and on account of warmth, moisture, and oxygen they propagate rapidly. It is estimated that one unclean mouth may contain over 1,140,000,000 microörganisms. An ordinary drop of saliva from the average mouth contains 4375 microörganisms. These germs live and reproduce themselves, and generate certain poisons called toxins. Some of the toxins are not as vicious as others, for if they all were equally poisonous there would be few of us left to tell the story. The mouth is the best possible place where these germs can live and multiply. Here they have all that is necessary for their

*Read before the Detroit Academy of Medicine, at Detroit, Michigan, November 27, 1906.

peculiar life, and if let alone they are found by the million. All of them are not pathogenic.

Decayed teeth are absolutely dependent upon the presence and proliferation of microörganisms. These germs produce an acid which attacks the enamel of the teeth, dissolving the lime salts and exposing the organic material, and the germs feed upon it. There is practically a solution of the tooth-substance, leaving a cavity. A cavity, once formed, retains some of the food, which soon undergoes putrefaction, and this is a frequent cause of foul breath. A putrescent pulp may contain the bacillus pulpæ pyogenes, causing a bad odor. People who do not give their mouths proper care are never healthy. The environment is conducive to the production and maintenance of bacteria, which induce decomposition in animal matter. Whenever you have such decomposition there is always foul breath. Patients who are careless with their mouth always have bad habits of mastication, which is an important factor in the production of stomach-diseases. Food that passes into the stomach before it is ground up remains there as a foreign body and is likely to irritate the gastric walls, supplying a basis for the culture of microörganisms, the toxin of which may be the cause of certain pathologic conditions. Some of the germs may become incorporated with the food which has been masticated, enter the stomach, and here find a medium for development. The multiplication of microörganisms and their products induces hyperæmia and then a hypertrophic condition of the mucous membrane, in which, instead of normal secretion of gastric juice, there is a heavy, viscid, ropy mucus, which is tenacious and clings to the mucous membrane. This mucus fills the mouths of the glands and completely covers the mucous membrane, so that it almost entirely precludes the possibility of anything like normal digestion. The food itself begins to act as an irritant, because the juices are not able to penetrate into it; and the proteolytic process yields to fermentation and putrefaction, with the production of foul breath.

Not all microörganisms that excite inflammation are pyogenic, for the lactic acid microörganisms form a toxin that causes catarrhal inflammation. Germs which usually produce pus in interstitial tissue do not produce pus when they develop on the mucous membrane, but may simply keep up chronic inflammation. While many of the microörganisms found in the mouth do not produce pus, they nevertheless induce inflammation, as is usually found in gingivitis marginalis. The mucosa recedes from the gingival margin, and the absorption of the alveolar process takes place. This whole process may be brought about by a change in the secretions from salivary glands. Normally this secretion should be slightly alkaline, and any deviation from this may in-

duce the incrustation that forms on our neglected teeth. This tartar, which may produce foul breath itself, acts as an irritant to the gums and is to a large extent responsible for the disease known as Rigg's disease or pyorrhœa alveolaris. In pyorrhœa alveolaris we find the micrococci gingivæ pyogenes or the bacterium gingivæ pyogenes, either of which will cause foul-smelling pus, which may be the cause of the fœtor.

Ulcerative stomatitis is at times a factor in the production of foul breath. This condition may be brought about by the administration of drugs, such as mercury, lead, iodides, etc., or a pathologic condition such as scurvy. In almost all cases of stomatitis the odor is fœtid. On the dorsum of the tongue are found deep fissures, and in these fissures are deposited minute quantities of food undergoing decomposition, forming an excellent culture medium for microörganisms. Glossitis is observed to give a foul breath, due to the mucous membrane being covered with this thick layer, consisting mainly of microörganisms. In chronic constipation the back of the tongue is usually covered with a thick, brown deposit, causing the bad odor, although the tongue is not apt to cause bad breath, as it is easily accessible for cleansing purposes. Affections of the mucous membrane of the cheeks, gums, fauces, and tonsils are more apt to cause foul breath.

Certain abnormal conditions of the tonsils may be the cause of bad breath. They are frequently so honeycombed that particles of food become lodged in their crypts and there undergo decomposition. Concretions found in the tonsils are also responsible for this condition. A careful examination of every tonsil should be made in all cases. Catarrhal and ulcerative conditions of the fauces are important factors, for we find foul breath of a high degree in diphtheria.

Carcinoma of the œsophagus manifests itself by a fœtid breath, especially if there is disintegration of the growth. Any stagnation in the stomach-content is apt to produce foul breath. This is found in dilatation, atony, and gastroptosis. Even here the foul breath may be due to the accompanying catarrh of the buccal cavity.

Foul breath is frequently found as a symptom in disease of the respiratory organs. We may have a fœtid bronchitis, bronchiectasis, and cavernous formations. Affections of the nose frequently cause foul breath, as is regularly the case in ozena. The nose is the organ to which inspired and expired air impart a portion of their impurities. This explains why we meet foul breath oftener where mouth-breathing is the habit rather than the normal nasal breathing. In fact, in all diseases where mouth-breathing has to be resorted to the same observation holds good. Adenoids, enlarged turbinates, polypi, or

a deviated septum may be the cause. We see this at times in constipation, menstruation, pregnancy, cardiac and renal diseases, for here reflex congestion of the inferior turbinates takes place, so that mouth-breathing must necessarily supplant nasal breathing.

Foul breath is seen in uræmia, partly due to the decomposed products carried into the circulation and removed through expiration, and also through the uræmic stomatitis which accompanies the pathologic condition. In certain metabolic disturbances the expired air assumes a peculiar character, as is found, for instance, in diabetes.

As to the treatment of foul breath, this will depend on the cause of the trouble. It hardly requires mentioning that careful cleansing of the mouth, teeth (artificial and natural), tongue, and fauces plays an important rôle. The teeth themselves should frequently be brushed with a dentifrice and water, not only on their labial but also on their buccal surface. As to the cleansing of the tongue, energetic rinsing of the buccal cavity is sufficient. In febrile cases the cleansing should be effected, if necessary, by means of a soft, moist cloth. The application of tongue-scrapers is to be discountenanced, as they easily cause traumatic lesions. Should the fœtor be occasioned by an affection of the fauces, local treatment of the latter will be the best means for its removal. The attempt to treat foul breath by aromatic lozenges is irrational, as their use can only conceal the evil smell temporarily, but never remove it.

Affections of the gums, ulcerous conditions of the tongue or of the mucous membrane of the fauces and cheeks, naturally require adequate local treatment, with which constitutional treatment should, if necessary, be combined.

Where there are disturbances of the stomach in conjunction with stagnation of the ingesta, the motility of the stomach must be improved and antizymotic agents are to be recommended. Where there is constipation, its removal should have our first consideration. Mechanical treatment in cases of gastro-intestinal affections, especially faradization and vibration, will exercise a beneficial influence, not only on the original affection, but also on the fœtor which it occasioned.

Pathologic conditions of the respiratory organs should also be treated and rectified before an improvement or removal of the foul-smelling breath can be expected. Thus in affections of the nose local treatment will remove the fœtor; in pulmonary disturbances, the administration of suitable remedies will bring about the same result. In affections of the genito-urinary organs the only way to remove the odor is the successful treatment of the causative factor. The same holds good for diabetes and chlorosis.

I should like to call attention to the peculiar phenomenon of foul breath

occurring with many persons in consequence of prolonged speaking, or in consequence of hunger or mental excitement. In these cases the ingestion of small quantities of food is the most efficacious treatment. As a rule, the cause of the bad odor in these cases is a turgescence of the nasal breathing, so that the removal of whatever may impede the respiratory function taking place through the nose would constitute a fundamental condition for the removal of the trouble. Generally speaking, the physician should first convince himself whether the patient practices typical nasal breathing, or whether respiration is habitually accomplished through the mouth. Should the latter be the case, patients should be persuaded to accustom themselves to nasal breathing; but it should be remembered that this is frequently possible only after nasal conditions have been suitably improved by the removal of possible local obstructions.

Special Article

PHYSIOLOGICAL ACTION AND USES OF ADRENAL EXTRACTIVES*
(Adrenal Extract, Adrenalin, Epinephrin, etc.)

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The fundamental importance of oxygen in all the functions of the organism and in the life process itself hardly needs to be emphasized; and yet the manner in which this gas enters our blood and its rôle in the tissues may be said to be unknown.

The prevailing view is that the entrance of oxygen into the blood and the elimination of carbon dioxide occur in accordance with the physical laws of diffusion of gases; but a well-known English physiologist, Dr. Pembrey, in an impartial review of the subject published this year,[1] states that "it is impossible to give a satisfactory account of the causes of gaseous exchange between the blood and the alveolar air." Landois,[2] in the last edition of his text-book, ascribes the absorption of oxygen to a chemical process, and adduces various facts which show that it does not depend on a diffusion of the two gases involved. What is the nature of this chemical process?

The only other conception of the respiratory process that has received serious attention is one to which Pembrey refers in the following words: "The body of evidence has been steadily increasing in favor of the secretory

* A paper read, by invitation, before the Medical Association of the Greater City of New York, on October 15, 1906.

theory, especially as regards the absorption of oxygen." This theory is that of Bohr,[3] who in 1891, showed that contrary to the prevailing view, the oxygen tension was not greatest in the pulmonary alveoli, but in the arterial blood, and that pulmonary respiration could only be accounted for by the presence of "a kind of *internal secretion*," derived perhaps from the alveolar membrane, and capable of actively taking up the oxygen of the alveolar air. Bohr's results were confirmed by other investigators, all of whom recognized the need of the secretion referred to. The main feature of Bohr's theory, however, has failed to come to light, viz., the source and identity of the internal secretion which absorbs the oxygen of the air. It was this function which, in my work on the "Internal Secretions," published in January, 1903, I ascribed to the secretion of the adrenals—a conclusion which additional researches have fully sustained.

A brief outline of a few of the facts upon which this conclusion is based is all that I can submit to you within the brief time at my disposal.

The presence of "a substance having greater avidity for oxygen than the blood itself," as Bohr and Henriques[4] state, is also sustained by the fact that Garnier,[5] twenty years ago, found that a solution of ultramarine blue was decolorized when sprayed into the lungs—a phenomenon explained only by the presence of a powerful reducing agent therein. Pembrey[6] also wrote recently: "A still further piece of evidence in favor of the secretory theory is the great capacity of the pulmonary tissue to reduce alizarin-blue when, as in Ehrlich's experiments, it is injected into the living body, and air is still passing in and out of the lungs."

That it is the adrenal secretion which is the reducing agent imposes itself, in view of the fact that it is itself a very active reducing agent, and that it is exposed to the air in the lungs. Its marked affinity for oxygen was emphasized by Vulpian,[7] Cybulski,[8] Abel, Takamine, and others, and its presence in the lungs is rendered inevitable by the fact that it is secreted in the inferior vena cava, that is to say, in the identical blood which reaches the lungs by way of the heart, and which becomes oxygenized while passing through the alveolar capillaries.

After absorbing oxygen, the adrenal secretion, following the blood-current, must naturally enter the arterial blood-stream. Considerable evidence is available to show that it becomes therein a constituent of the blood-plasma, and of the hæmoglobin.

That it is the hæmoglobin which takes up the atmospheric oxygen, is, of course, familiar to every one. There is a constituent of this substance, however, to which Gamgee[9] refers as the "yet unknown constituent of the cor-

puscle." After pointing out that hæmoglobin is composed mainly of two substances, a body containing all the iron—hæmatin, and an albuminous body, this eminent chemist remarks "as to the true nature of the albuminous residue we have very little knowledge." As the proportion of this substance in the hæmoglobin molecule is 94 per cent. (Gamgee), it is apparent that all but 6 per cent. of the contents of the red corpuscle is admittedly an albuminous body of unknown function and identity. Now, this body corresponds with the oxygen-laden adrenal secretion, as will be shown presently.

There is another substance in the blood, the source, nature, and function of which has remained unknown. Its presence in the blood of invertebrates and vertebrates has been demonstrated by a large number of investigators, including Bertrand and Bourquelot,[10] Piéri and Portier,[11] Abelous and Biarnès,[12] Bunge and Schmiedeberg,[13] Salkowski,[14] and Jolles,[15] and is generally known under the name of "oxidase." This substance is not only a powerful oxidizing agent, but the possibility of its being connected with the respiratory process has been suggested by Duclaux. Indeed, Piéri and Portier, Bourquelot, Abelous and Biarnès, and others, found that the respiratory organs, the gills of crustaceans and mollusks, for example, gave the guaiac-blue test for oxidase more intensely than blood derived from other parts of the body.

The oxyhæmoglobin being the blood's oxidizing body, why should a second substance having the same property be present in the blood-stream? This naturally suggests that oxyhæmoglobin, oxidase, and the oxygenized adrenal secretion are one and the same body. That such is the case is shown by the fact that their chemical properties—a few of which I must inflict upon you—correspond.

In the first place, various experimental facts indicate that the albuminous oxyhæmoglobin and oxidase are the same substance. As demonstrated by Schmiedeberg, Jaquet, Salkowski, and other physiological chemists, the plasma itself is an active oxidizing agent—a fact which indicates the presence therein of an oxidizing substance of some kind. That this substance is oxyhæmoglobin is shown by the well-known guaiac-blue test, one of the most delicate at our disposal to discover the presence of blood in linen, clothing, etc. Hammarsten[16] states that oxyhæmoglobin "has a direct oxidizing action upon tincture of guaiacum." Now, the guaiac-blue test is also the most prominent one for the detection of oxidase in all organisms, vegetable or animal, as shown by all the investigators I have quoted. It is undoubtedly the albuminous portion of hæmoglobin which is present in the plasma, and which reacts to this test, for its iron-laden moiety, hæmatin, is colored a muddy-red, and

not blue by guaiac, as shown by Piéri and Portier,[17] while as pointed out by Hoppe-Seyler,[18] pure hæmatin is not affected by reducing agents, which means that it cannot oxidize. Moreover, while Landois[19] alludes to hæmoglobin as a "colloidal substance," Jolles[20] refers to human oxidase as a "colloid." Auld[21] also characterizes the adrenal secretion as a "colloid."

Our blood is thus shown to contain two oxidizing bodies which react in the same manner to guaiac, and which are similar in physical properties. Indeed, both these bodies are now being connected with tissue respiration. We have seen that Bourquelot suggested a connection between oxidase and respiration. Howell,[22] in his recently published treatise, also says, after reviewing briefly the oxidase question, that "such facts as these lend great probability to the belief that eventually it will be shown that the oxidations in the body are effected by the influence of oxidases or peroxidases." If this proves true, the oxidases will be given the same function that is now ascribed to oxyhæmoglobin—the identical substance with which it corresponds so closely. The inference is obvious.

Nearly four years ago I advanced the view that the plasmatic oxidizing substance of Schmiedeberg, Salkowski, Jaquet, and others, now known as oxidase, fulfilled the functions of oxyhæmoglobin, and that this compound was naught else than the oxygenized adrenal secretion. Now, this secretion corresponds in its chemical properties with both the oxidase and the albuminous hæmoglobin. In the first place, the oxidase was found by all the chemists I have quoted to react to the guaiac test, precisely as oxyhæmoglobin does. Moreover, it was found by Piéri and Portier, Abelous and Biarnès, and other investigators, to resist all temperatures up to 100° C., the boiling point. This is a characteristic of adrenal extracts and adrenalin as observed by Cybulski, Moore,[23] and others. In the second place, Gamgee[24] states that the loose portion of hæmoglobin is insoluble in absolute alcohol, chloroform, benzol, ether, and carbon disulphide. Vulpian,[25] Gautier,[26] and Moore, collectively, refer to the fact that adrenal extract is insoluble in the same substances. In the third place, Mühlmann[27] held that the bronzing in Addison's disease was due to oxidation of the adrenal principle in the cutaneous capillaries, a view sustained by considerable evidence. This not only emphasizes the presence of an oxidase in the blood—since all oxidases show this peculiarity of turning brown—but also that the adrenal principle itself is distributed throughout the entire organism. Finally, Battelli[28] has shown recently that adrenalin was a widespread constituent of the blood-plasma.

This evidence, to which considerable could be added, indicates clearly that the albuminous constituent of hæmoglobin—the identity and function of which have remained unknown—is the oxygenized adrenal secretion.

It is now believed that *oxygen* alone is dealt out by the red corpuscles, whereas in the light of my views the albuminous hæmoglobin is secreted by these cells gradually as it is needed by the tissues. That the red corpuscles are only storage cells for an oxidizing substance, and that it is the latter which carries on the oxidizing process in the tissues is shown by the fact that, although the blood of nearly all invertebrates does not contain red corpuscles, it can, nevertheless, absorb oxygen and adequately carry on tissue respiration. In fact, the history of the red corpuscle throughout the whole phylogenetic scale shows that this cell is a tardy addition to the plasma or white blood, and that it has for its purpose to increase its oxidizing power when the cell-colonies constituting an organism become very numerous and highly differentiated, as they are in vertebrates.

Again, according to the prevailing doctrine that oxygen alone is dealt out by the red corpuscles, there should be no outpouring of hæmoglobin into the blood-stream. Conversely, according to my own interpretation, the albuminous portion of the hæmoglobin is secreted by these cells mainly in the capillaries, and an excess of hæmoglobin should be found in the veins. Now, Hammarsten[29] states that hæmoglobin "occurs only in very small quantities in arterial blood; in larger quantities in venous blood." Jolles, moreover, though unaware of the fact that red corpuscles might act as storage cells, recently called attention to the fact that the activity of oxidases was "in definite relation to the number of red corpuscles present."

On the whole, the adrenal secretion, as I interpret its functions, takes up the oxygen of the air in pulmonary alveoli, and becomes the constituent of hæmoglobin, which carries on the oxidation process in all tissues.

This conception, moreover, furnishes a lucid explanation of the rôle of the adrenal secretion in pathogenesis, and of the manner in which adrenal extractives produce their therapeutic effects.

(To be continued in our next.)

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Editorial

ANTI-VACCINATIONISM

THE PHILISTINE, the self-appointed champion of candid speech, claiming, indeed clamoring, to be regarded as the organ of naked truth as opposed to bedizened inferential opinions, in its issue of December, 1906, contains an ill-judged arraignment of vaccination. It contains much the same line of shallow arguments and sneering comments which adorns the customary utterances of the "Antis," who are, however, a body of people well worthy of attention. They have a good deal on their side in the way of data, official, encyclopædic, and medically reactionary, along with a few facts pointing toward lamentable defects in technic and operative carelessness which certainly demand correction, or rather prevention. They exhibit, also, admirable zeal and persistence. They refuse to accept the obvious truth that vaccination is a purely conservative, unselfish measure which has undeniably effected the saving of millions of lives, the health and organic competency of even more. Moreover, vaccination is based on the clearest of physiologic principles. The worst they can prove against this thoroughly established protective expedient is a certain small, almost infinitesimal, number of mishaps, few of them serious. Compared with defective methods, even faults, in many unassailed remedial and protective measures, these rare but deplorable instances of damage are as nothing compared with the benefits accrued. There is no doubt whatsoever that the advances in scientific research will steadily reduce these dangers, by improving methods and materials, until they

shall cease. In time some other safeguard may be found equally, or possibly far more, efficacious, which will then be adopted and vaccination relegated to the desuetude of outworn prophylactics.

The search for truth, for the best measures for perfection in methods, is the sincere quest of the profession of medicine always, and never more so than at the present time, when candor is almost a fault.

It is a mournful commentary on the perpetually recurring misdirection of honest-minded energies that a body of such excellent people should turn Heaven and earth upside down, assailing the integrity of a good, well-proven preventive measure, the best that we have, and eminently satisfactory. How much better would it be if they could be pursuaded to enlist their energies in so vastly more important an undertaking, the stamping out of an infinitely more serious peril which creates untold havoc in secret, viz., the venereal diseases. The medical journals, nowadays, are full of this subject. There is no need to rehearse the facts open to all who will read them. The difficulties of accomplishment are, at present, almost insurmountable, because this "pestilence worketh in the deepest darkness," because the sentiment of society is to ignore it, to refuse to discuss it, will not adopt suitable corrective and preventive measures.

At the recent broad consideration of the subject by the Pennsylvania Society for the Prevention of Social Disease (College of Physicians of Philadelphia, December 20, 1906), where it was discussed from the standpoint of the physician, specialists in human economics, and the public press, certain points were made plain. The medical profession is doing what it can, not so broadly as it undoubtedly will when coöperation is more general. But all that is done is sadly nullified by deeply-rooted human prejudices. The conclusion reached from every standpoint is that our hope for success depends entirely upon securing the most open, thorough, constant, and consistent propaganda of education. The people must acquire the conviction that, to correct secret vice (the French call all venereal diseases secret maladies) it can only be done by a full exposure to the light of knowledge and reason. In this all those who are honestly desirous of alleviating human sufferings, saving the innocent (even our own families and friends) from the most deadly, dangerous, demoralizing of maladies, absolutely must work together untrammeled by false modesty. Precaution against epidemic diseases exist, are enforced by governmental regulations. But against these ever-present endemic infections there are no adequate, almost no systematic regulations.

Vaccination has reduced smallpox to a position of inconsiderable danger. Occasionally there may occur a few mishaps in carrying out this practically

innocuous, yet absolutely needful measure. The improvements certain to be achieved will remove all this. Against the stealthy, overcloaked progress of the secret maladies there is no defense except, so far as society is now constituted, raw exposure, ventilation, fullest publicity, and the sternest condemnation for the guilty individuals who propagate them. The man, who is the aggressor in every instance, should be blamed quite as much as the woman, indeed, in street ethics, vastly more so.

The public, as is shown by Dr. Talcott Williams, speaking from a life study of the subject as a journalist, will not accept, not even tolerate, seggregation or licensing, of the social evil. Governmental regulations have been made, time and again, especially in the more primitive stages of municipal development, but they are totally ignored, and always ineffectual. All experience shows that the only reliance is public opinion. Here is a field of activity incomparably better for zealots, reformers, philanthropists, would-be guardians of public health. Here is offered fullest scope for wholesome, judicious endeavor. Here is a slogan in support of which all right-thinking people would join.

What large good can the anti-vaccinationists ever hope to accomplish? The utmost they could achieve would be to discountenance a well-tried, successful means of preventing a disease which is gradually dying out. If it be their desire to discredit the honesty, the disinterestedness of the medical profession, they may do something by clamorous misrepresentation. If it be their sincere desire to do some little thing toward bringing to pass the millenium, the golden age of health and happiness, the largest of possibilities lies close to their hand in educating the public in the perils which work endless havoc, almost unchecked, by the secret maladies. If, finally, they ignore this challenge, or this offer of an opportunity to gloriously benefit humanity, they stand convicted of cowardice, of incompetency, of blindness to the sense of proportion; they miserably fail, they are not sincerely desirous of being and doing good.

J. Madison Taylor.

Cyclopædia of Current Literature

ACHYLIA GASTRICA.

The writer bases his observations on 9 cases of the disease seen in 235 consecutive cases of chronic disease of the digestive organs, in which number there were 41 cases of subacidity. He therefore regards the simple achylia gastrica as a relatively common condition. The symptoms are not characteristic, and the diagnosis must be made from the physical examination of the patient and of his stomach contents and fæces. Those

cases are best classified as achylia (although not such in the strict sense of the word) in which there is an entire lack of hydrochloric acid secretion, but in which very minute traces of pepsin or rennet are retained. In making the diagnosis of gastric cancer, the frequency of simple achylia should be remembered, which may resemble it closely. The examination of the fæces for invisible blood is, under these circumstances, especially useful. The etiology of simple achylia is unproved; its course suggests a functional origin. Its most satisfactory treatment is hygienic and dietetic. F. W. White (Boston Medical and Surgical Journal, November 8, 1906).

ALCOHOL AS A THERAPEUTIC AGENT.

Alcohol, in fever and in some other conditions associated with exhaustion of the nerve-centers or an inability to digest or appropriate other nutriment, may be employed as food, replacing the carbohydrates and conserving proteid metabolism. It places no task upon the digestive organs; on the contrary, if used carefully it increases their secretion, thus favoring the digestion and absorption of other foods. In such conditions it may also have a favorable action on the hepatic cells, stimulating them to increased activity.

Alcohol is not an efficient cardiac or respiratory stimulant to be used for long periods. In some conditions associated with a determination of blood to the interior of the body, alcohol, by dilating superficial vessels and equalizing the circulation, may be of considerable service. Alcohol is not a stimulant to the nervous system. Its action is that of a narcotic, benumbing sensation, including that of fatigue, allaying subjective symptoms, relieving nervous strain, and promoting rest. No other narcotic can be used so freely with so few injurious after-effects.

In infections of all forms alcohol should be used cautiously. In such cases it may be of value to the system either as a food itself or as favoring the digestion and absorption of other foods; but in large amounts it may, and probably will, do harm by interfering with the resisting powers of the organism.

It must be recognized that the effects of alcohol vary much with the individual, and its action is dependent, to a great extent, on the condition of the gastric mucous membrane and portal circulation. Its employment demands much discrimination, and careful and frequent observation. It should also be borne in mind that its prolonged use is liable to produce degenerative changes in the heart, blood-vessels, and secreting organs. A. D. Blackader (British Medical Journal, November 24, 1906).

ANTITOXIN, ORAL ADMINISTRATION OF.

According to the authors, antitoxin for diphtheria and tetanus may be given by mouth and absorbed in sufficient amount to show markedly antitoxic properties in the blood of the treated animal. This result has been obtained by the use of certain drugs with the serum: on the one hand, drugs that inhibit digestion; on the other, those that promote absorption. It remains to be shown what are the best drugs for this purpose, and in what quantities. Their experiments also show that the toxins of diphtheria and tetanus are absorbed from the alimentary canal, provided digestion is inhibited. This may point to a method for slow, gradual immunization of animals or men, and also suggests an explanation of many cases of toxæmia, due to the absorption of pu-

trefactive products when digestion is deranged. When antidiphtheria serum alone is given to guinea-pigs by the stomach, absorption does not take place with any degree of uniformity. It is interesting to note that the so-called sensitizing action of horse serum, when given to guinea-pigs by the mouth, is not nearly so great as when injected subcutaneously or into the peritoneum. C. T. McClintock and W. E. King (Journal of Infectious Diseases, October 30, 1906).

APPENDICITIS.

From a study of one hundred consecutive operations for appendicitis, the writer concludes that in children the onset may be insidious; they can give no account of their symptoms; they resist examination; owing to the thin submucous coat, abscesses form much more rapidly; and general peritonitis is much more common. Therefore, the treatment of appendicitis in children should be to remove the appendix as soon as a diagnosis has been made. The most important disease to be excluded is pneumonia: the respiration is rapid, the alæ nasi dilate, and the abdominal muscles usually relax between respirations. The advantages of early operation are ease of performance, absence of adhesions, shortening of convalescence, non-occurrence of ventral hernia, and subsequent disability due to adhesions. The signs of a severe attack are severe onset, facial expression, dry tongue, rapid pulse with a falling temperature, diarrhœa, recurrence of the initial vomiting, disappearance and recurrence of pain and tenderness, rigidity of the abdominal walls, presence of tumor, abdominal distention, and a high leucocytosis. H. W. Carson (British Medical Journal, November 10, 1906).

ASTHMA, TREATMENT OF.

The writer believes that, while there may be a hereditary tendency in a very few cases, most cases of asthma thus credited are due to neglect of catarrhal affections of the upper air passages in early life, producing pathologic hypertrophies of the turbinates, of Luschka's tonsil, and of faucial tonsils. These conditions tend to bring about a condition of pulmonary emphysema with imperfect oxygenation, resulting in the autointoxication revealing itself in the asthma. Cases developing later in life are due likewise to imperfect metabolism and autointoxication, the causes in such cases being the habits of life of the individual, among which the author includes overeating, constipation, sedentary life, and insufficient use of the lungs in an imperfectly oxygenated atmosphere.

The chief evidences of the autointoxication are the degree of acidity of the urine and the degree of indicanuria present. The writer states that he has never had a case of asthma under observation in which there was not, when first seen, a strongly acid urine which deposited on centrifugalization urates and uric acid or calcium oxalate, and showed a pronounced reaction for indoxyl sulphate.

The treatment, in the author's opinion, should consist mainly in proper attention to the upper air-passages and nutrition in early life. If seen later, much can be done to prevent recurrence of the attacks by correcting obstructions in the upper air-passages and other sources of irritation of the nervous system; but, above all, by so regulating the intake of food and stimulating the elimination of waste products that a proper metabolic balance can be maintained. As regards the treatment of

the immediate attack, the author has nothing new to recommend. The main treatment of the disease requires a most careful study of each case and prescribing of a mode of life as indicated by the findings. De Lancey Rochester (Journal of the American Medical Association, December 15, 1906).

AURAL DISEASES, CONSERVATIVE METHODS IN.

In all cases of acute otitis media, attended with pain and temperature and bulging of the membrane, and particularly if the patient is suffering from a marked toxœmia and mastoid tenderness, an early and free incision should be made in the drumhead. It is only in the very mild cases that it is ever wise to defer opening of the drum membrane.

A mastoid operation can often be warded off if the case is seen in the hyperæmic stage, by the application of the artificial leech and the Leiter coil, and by making a free incision in the drumhead. In the case of young children we can afford to wait longer than in adults, and it is often advisable in infants and young children to make several incisions in the membrane rather than to perform an immediate mastoid operation, especially if the principal symptom is elevation of the temperature alone. The nature of the infection should be determined by an examination of the pus from the middle ear. If the streptococcus or pneumococcus is present in large numbers, and particularly if the patient has marked toxæmia with mastoid symptoms, an immediate operation in such cases is generally called for if the acute symptoms have not yielded to a free opening in the drumhead. A blood-count should be made daily, in order to determine whether the leucocytosis is increasing or decreasing, and what relative changes are taking place in the cell percentage. In other words, all the evidence possible should be obtained about the case before deciding to operate, rather than rely on fever and pain alone.

In cases of chronic suppurative otitis media, those that require an early operation and those that can frequently be cured by conservative methods must be differentiated. In the former, the drainage is apt to be poor, owing to a small perforation and to the opening becoming clogged with cholesteatomatous material, the ossicles are carious, and there are caries and necrosis of the attic. The patient, in such cases, complains of severe headache and pain in the ear, and if good drainage is not established he is likely to have nausea, vomiting, dizziness, and a possible intracranial complication. In the latter class of cases, if the drainage is good and the patient does not complain of any particular symptoms referable to the ear, the discharge can often be cured by the symptomatic use of the middle-ear syringe and the insufflation of powders.

In all operations on the mastoid, care should be exercised not to expose the dura or the sinus, unless occasion requires it, for such practice has, in some instances, led to meningitis, and when the sinus has been accidentally opened septic thrombosis has followed.

In operations for sigmoid sinus thrombosis it is often unnecessary and dangerous to excise the internal jugular vein at the same time, especially in the case of children, for the longer the time the little patient is under the anæsthetic the more grave becomes the prognosis. If the operation is performed early and the clot has not begun to disintegrate, it is generally unnecessary to ligate and

excise the internal jugular vein, even if a flow of blood from the bulbar end is not secured. In such cases it is wiser to postpone further operative interference for at least twenty-four hours. Gorham Bacon (British Medical Journal, November 17, 1906).

BROMISM.

The writer believes that bromides are often given in excessive doses continuously over a long period in epilepsy and some other diseases. In many cases they are contraindicated, or the patient is not carefully enough observed during the course of treatment. After a few weeks cellular resistance is lowered, the degree depending on the individual susceptibility and amount of drugging.

The great importance of an early detection of the mild beginning state of bromism is apparent. Though the skin often gives the first evidence, other organs may be simultaneously affected, and some few show the first isolated symptoms of bromism. For the future welfare of the individual, the gastrointestinal and mental derangements from the injudicious use of the bromides are of greater importance than skin lesions. A. L. Skoog (Journal of the American Medical Association, December 1, 1906).

CANCER, NATURE OF.

The author believes that the organism manufactures its own parasite. The organism is composed of cells which have at the same time an independent and a collective existence as part of the whole. If some of the cells refuse to obey the laws of the collective existence, developing without further regard to the organism as a whole, they become actual parasites, and, unless they can be overcome by the phagocytes—which are the police of the organism—or are removed by the knife of the surgeon, they are liable to proliferate indefinitely, and cancer is the result. Migrating cells from the central colony are liable to start daughter colonies at almost any point; these are the metastases of the malignant growth. The resulting general disturbance, which is called cancer cachexia, is merely the result of interference with the proper functioning of certain organs, or the obstruction of certain passages, or opening the door to superposed infection. Cancer is thus anarchy on the part of some of the cells. Debove (Presse Médicale, Vol. xiv, No. 88; Journal of the American Medical Association, December 22, 1906).

CANCER, RELATIONS BETWEEN PERNICIOUS ANÆMIA, LEUKÆMIA, AND.

The close resemblance between malignant tumors and pernicious anæmia and leukæmia is pointed out by the writer, not only from the pathologic anatomic point of view, but also from the biologic. All three are favorably influenced by arsenic and the Roentgen rays, and as instances are known in which an intercurrent erysipelas has had a favorable influence on malignant tumors, so also the same has been observed in pernicious anæmia and in leukæmia. A further argument in favor of the etiologic connection between them is the similarity of the reaction to the precipitin and the hæmolytic tests of the blood-serum of patients with cancer and with pernicious anæmia and leukæmia. They all give the same specific reaction.

The writer calls attention to the frequency with which the malignant blood-diseases develop after some affection entailing ulcerative processes in the digestive tract, such as typhoid, tuberculosis, diarrhœa, syphilis, or gastric ulcer. Embryonal cells, he states, may be in-

gested in the food in the form of raw eggs, raw meat, raw sausage, or the like, and these embryonal cells from another species pass through the ulcerative process into the lymphatics and thence into the bone-marrow, where they are liable to proliferate and to induce the clinical picture of pernicious anæmia or leukæmia. G. Kelling (Münchener medizinische Wochenschrift, Bd. liii, No. 39; Journal of the American Medical Association, December 8, 1906).

CHOLERA, QUININE TREATMENT OF.

The writer claims that, rightly administered, quinine has always proved the best remedy in Asiatic cholera; that it has only failed to give the best results when it has been improperly used as to dosage or method of administration, and that it is just the remedy of all others from which we should expect such best results. He gives the history of this use of the drug, relates his own experience, and quotes from a number of writers who have reported success with this treatment in former years, also referring to the communication of Ussher as the latest testimony to its value. He mentions experiments made at his suggestion, which confirm Koch's findings as to the germicidal action of quinine on the cholera spirillum, showing that a solution of 1 to 2500 checked all growth in cultures in thirty minutes. He has not yet been able to obtain data as to the results of quinine treatment in the Philippines. The best results, according to experience, appear to be obtained by giving 10-grain doses of the sulphate every hour; the bisulphate, being more soluble, is liable to be absorbed, and therefore is less effective as an intestinal disinfectant. The sulphate should be given moistened only with a little water and not in solution. Slight symptoms only of cinchonism have been observed when the insoluble sulphate was employed. The fear of ill effects may be set aside, as the lethal dose lies somewhat beyond one ounce of the drug, and quinine, moreover, is antiemetic in cholera. E. B. Fullerton (Journal of the American Medical Association, December 15, 1906).

CUTANEOUS CANCER, TREATMENT OF.

According to the author, every case of cutaneous cancer demands special consideration, special study, and special selective treatment. No one method of treatment of cancer is best or most efficient for all cases of operable cancer. All cases of multiple cutaneous cancer and all aged persons with cutaneous cancer require internal treatment in the form of diet and drugs in addition to local measures. A diet of milk and green vegetables and the avoidance of meats in general, and of meats of such organs as liver and kidneys in particular, and the avoidance of alcohols, are advisable in all cases of cancer, whether external or internal. Thyroid extract should be given in as large doses as can be borne in all cases where there is a senile condition of the skin and in most superficial epitheliomata.

A knowledge of the kind of cancer present, the pathological anatomy, and the manner of extension of the disease in general and of the special variety of the case to be treated, is necessary to a correct choice of method of treatment. When possible, all cases should be under observation at least one year after commencing treatment of any kind, in order to treat promptly any recurrence of the disease.

Early diagnosis and correct treatment place cutaneous cancers among that class of diseases which do not deserve

the name of *incurable diseases,* as almost without exception they can be treated successfully if the method employed is the correct one. A. R. Robinson (New York Medical Journal, December 29, 1906).

DRUG ERUPTIONS, HISTOPATHOLOGY OF.

As a result of the authors' observations on iodine bromide eruptions, they conclude as follows: (1) The local eruptive phenomena are prone to occur at points of previous inflammation—about comedones, acute lesions, seborrhœic lesions, scars, traumata, scratches, etc. (2) Traumata, pressure, and quick changes of temperature may precipitate an eruption in tissues charged with the drug. (3) Iodiosyncrasy or susceptibility may be admitted as it is in other toxic conditions. (4) The glands or follicles of the skin take no active or specific part in the production of the lesions, and when they are involved, it is secondarily and passively to inflammatory changes about the vessels and in the connective tissue. (5) The gross histologic changes in the skin consist in different degrees of inflammation, from slight changes about the vessels to destructive abscess formation and progressive death of tissue. (6) The minute histologic changes are (*a*) increase of connective-tissue cells about the vessels; (*b*) appearance of lymph-like cells about the vessels; (*c*) addition to these cells of trifold leucocytes with granular appearance of collagen and vacuolation of fixed connective-tissue cells; (*d*) local increase of all the phenomena and the formation of an abscess. (7) The first and second conditions are found in the normal skin with iodide eruption. (8) The stages three and four, or the addition of leucocytes and degenerative changes, are induced by local disturbance of normal equilibrium between the iodine combined in the serum and the tissues. (9) This disturbance of equilibrium may be induced by various factors, and when it does occur the resultant product acts as a toxin, which in its turn causes tissue-irritation and the production of various local inflammatory symptoms, the type of symptoms and the eruption being dependent on the character of the individual's reaction to the inflammation thus produced, as in any other toxic condition. M. F. Engman and W. H. Mook (Journal of Cutaneous Diseases, November, 1906).

ECLAMPSIA AND TETANY, CALCIUM IN RELATION TO.

The writer propounds a theory that eclampsia, tetany, and similar convulsive affections are due to a deficiency of calcium in the blood. He says that just in those periods (namely, early infancy, six months to three years, the puerperal period, rickets) when a spasmophilic tendency is most marked, there is a corresponding deficiency of calcium. He further bases his hypothesis on the following considerations: (1) the increased elimination of calcium in various psychopathies associated with much mental work; (2) excess of calcium causes cerebral depression; (3) the brains of children suffering from tetany contain less calcium than normal; (4) the therapeutic benefit derived from the salts of calcium in the nervous manifestations of rickets; (5) phosphorus and lecithin stimulate the nervous system, possibly favoring the assimilation of calcium; (6) in pregnancy and lactation the mother probably loses a perceptible amount of calcium. Silvestre

(Gazz. degli Osped., August 12, 1906; British Medical Journal, December 15, 1906).

EPILEPSY, AFFECTIONS OF THE SPINAL CORD IN.

The author remarks that slight attention has been given to spinal cord involvements in epilepsy, and gives the results of his examinations of over 500 patients in the Massachusetts Hospital for Epileptics. He found evidence of spinal cord disease in a small number. In certain proportion it was only a coincidence, but in a far larger proportion the same cerebral lesion produces the symptom-complex of epilepsy and the secondary degeneration of the spinal cord. We would naturally expect to find secondary degeneration of the cord in epileptic hemiplegia, and occasionally other spinal affections are found, possibly also secondary to cerebral lesions. In the third class of cases the primary pathologic cause of the convulsion acts directly on the spinal cord as well as on the brain, and in such cases one can be primary as well as the other. It is probable, the writer states, that in typical idiopathic epilepsy lesions can be found in the cerebrum or cerebellum in practically all cases when properly examined, and he believes that similar lesions can be detected in the spinal cord, though definite evidence is still lacking. Microscopic examination of spinal cords from epileptics by Dr. Southard have given interesting results. Marchi degenerations of a diffuse non-systemic character were found in almost every case of the series examined. W. N. Bullard (Boston Medical and Surgical Journal, November 24, 1906).

EPILEPSY, IMPORTANCE OF EARLY DIAGNOSIS AND TREATMENT OF.

The diagnosis of epilepsy at the earliest possible stage of its development is essential to successful treatment. Convulsions from any cause and at any age are not to be regarded as of slight significance, but the possibility of the development of epilepsy in every case must receive careful consideration. Recurring convulsions in the young, associated with hereditary susceptibility to nervous diseases, should invariably be regarded as probably epileptic in their nature. The more insignificant the exciting cause, the stronger the indication of this disease should be regarded. It should be remembered, at the same time, that each return of the seizure renders permanent cure more doubtful. Though care should be exercised in doubtful cases, it is better to give the patient the benefit of the doubt and institute treatment early, even when a positive diagnosis of epilepsy is not possible, than to allow the condition to become chronic and perhaps hopeless. The general care which should be given to a patient supposed to be epileptic would, in fact, benefit any obscure nervous disease, whether convulsive or not in its nature. F. M. Stites (Medical Record, December 8, 1906).

EXOPHTHALMIC GOITER, CLINICAL STUDY OF.

From an investigation of 80 cases, all of which presented the so-called cardinal symptoms, the writer noted the frequency of serious acute febrile exacerbations, with dilatation of the heart; the very common association of these exacerbations with tonsillitis; and the possibility of mistaking the highly toxæmic clinical picture for such acute conditions as malignant endocarditis or

other forms of acute general septicæmia. In none of the series did the influence of shock appear to be a definite causative factor. The gland was more or less enlarged in all cases, in most of them moderately and bilaterally. In 14 cases there was a distinct preponderance of enlargement on the right side, and in 9 on the left. The heart was enlarged in many cases. In one-half of all cases murmurs were heard. In many instances these disappeared under treatment, showing that they were due to dilatation or overaction. Gastrointestinal symptoms were present in about one-fourth of the cases. They consisted of irregular attacks of vomiting and diarrhœa, as well as abdominal cramps and sensations of distension and distress. Loss of weight was recorded in about one-third of all cases, and was often considerable. Œdema was observed in 23 cases of the entire series. Sweating was noticed in 20 cases. Erythema was present in 10 cases. Slight hæmorrhages are occasionally associated with the disease. Von Graefe's sign, Stellwag's sign, and Moebius's sign were not often mentioned in the case-histories under discussion. Pregnancy, instead of increasing the nervousness and other symptoms, as might be supposed, either exerts no special influence or the patient is materially better during the period of gestation. Diabetes was coincident with the exophthalmic goiter in 3 of the series. In several cases the thyroid extract had been prescribed. The patients were uniformly made worse by it. The duration of the disease varied from six weeks to twenty-five years, but more than one-fourth of the patients had had symptoms from two to four years. There were eight fatal cases. In 20 of the 80 cases, or in 1 in there was a history of tonsillitis or quinsy, and in 10 more or less acute infection of the respiratory system. W. G. Thompson (American Journal Medical Sciences, December, 1906).

EXOPHTHALMIC GOITER, THERAPY OF.

The author vouches for the value of phosphorus in the treatment of exophthalmic goiter. He usually prescribes half a milligram in a pill, and gives two pills daily. The same quantity of phosphorus may be given in codliver-oil. In prescribing arsenic he has used for several years the cacodylates. Sodium cacodylate may be given in 1 or 2 centigram doses by the mouth or intramuscularly without danger. Strychnine, as a tincture, may be given with quinine for tonic purposes with great benefit. To afford relief the writer favors a mixture consisting of ammonium bromide, 0.2 gram; codeine phosphate, 0.1 gram; sodium bromide, 1 gram. Schlesinger (Medical Press and Circular, October 17, 1906).

FATS, INTOLERANCE OF.

The writer believes that the subject of the intolerance of fats needs attention, because fats, being very nutritious, are used freely, especially in cases of depraved nutrition and chronic disease. But these patients may not be able to digest milk, cream, eggs, olive-oil, etc. This is well recognized in cases of severe liver or pancreatic disturbances, and has lately been urged as a reason for a different modification of milk in certain cases of infantile indigestion. Indeed, the younger the person, the greater the apparent difficulty for the system to split up the fats and use them. The fat eaten may seem to be normal in amount, but more often is found to be increased. The object is to "build up" or "feed up" the patient. Thus a boy

of 11 may receive as high as 250 grams of fat daily, or about 5000 or 6000 calories. Forced feeding of phthisis patients will develop an intolerance of even normal amounts of fat. Special difficulty is also often encountered in pneumonia and typhoid fever, which may be relieved by using butter-milk, fat-free milk, or the white of the egg, gradually adding the yolk. However, it should be remembered that infection in the milk is most often the cause for its being badly borne. Gastric hyperacidity at first is relieved by fat, but later is much increased, and the condition then is promptly relieved by using fat-free milk.

After an acute infectious disease children often have a bowel disturbance which is due to intolerance of the fat, which is too freely given. Another group of patients not described in textbooks shows languor, sallowness, often foul breath. A reduction in the amount of fat given produces a cure. Cases of recurrent vomiting, too, may be due to fat-intolerance. On examining the stools for fat, note must be made of the amount ingested and of the size or number of the dejections. Otherwise any approximate estimates are useless. Not much value is to be attached to any statements except those based on a complete fat-absorption experiment, such as can rarely be conducted outside of an institution. E. L. Edsall (Journal of the American Medical Association, December 29, 1906).

FAUCIAL TONSILS.

Some observations made in the last few years on the entrance of tuberculosis into the general system, with special reference to the faucial tonsil, are presented by the author. He describes in detail the anatomy of this structure and its relation to other parts. He relates his researches, and in regard to infection states that if the surface membrane were the point of entry, tuberculous changes should be found there. This he has never seen in the slides examined. It has always been in the crypt. The crypts which empty into the throat direct are seldom if ever affected. Those emptying below the middle of the gland were not affected in a single instance. The greater number of infections were from crypts emptying into the supratonsillar fossa. The part of the crypt affected is universally in its deeper extremity, where giant cells are abundant in the tuberculous tissue. A few giant cells were at times noticed along the beginning of the crypt, but in these sections they were less in number than in the deeper part of the crypt. The cells were found dispersed in the tissue as far as the trabeculæ, which seemed to limit the spread of the tuberculous change. When the gland is diseased, it is important that it be enucleated completely, and that pockets in the soft tissues around the tonsils must be destroyed. C. M. Robertson (Journal of the American Medical Association, November 24, 1906).

GALL-BLADDER COLIC.

The term vesicular colic is applied by the writer to the pain attendant on efforts of gall-stones in the gall-bladder to pass into the biliary passages. The ordinary methods of treatment with cholagogues, mineral waters, etc., are seldom beneficial, but he has obtained uniformly good results with absolute rest in bed, exclusive skimmed-milk diet, taken in small, frequent amounts, administration of sedatives, permanent application of moist heat to the region of the gall-bladder, and strict avoidance

of purgatives and cholagogues, completing the treatment with enemas or suppositories if need be. This technic prevents the alterations of emptiness and fullness characteristic of the normal functioning of the gall-bladder. A continuous, gentle flow of bile, with the gall-bladder kept perfectly quiet, affords the best conditions for rapid subsidence of the symptoms. A. Gilbert (Presse Médicale, Vol. xiv, No. 91; Journal of the American Medical Association, December 22, 1906).

GASTRO-ENTEROSTOMY NOT HARMLESS.

The stomach may be looked upon as an organ for the protection of the bowel. The normal functions cannot be improved upon by any operation, and gastro-enterostomy is at all times a dangerous operation. The functional disorders of the digestive tract which occur after gastro-enterostomy and which may seriously interfere with nutrition, and the severe diarrhœa which may come on, are due not only to the premature emptying of the stomach, but also to the failure of neutralization by the bile and pancreatic juice of these acid products. This deficiency of bile and pancreatic juice is due to the absence in the duodenum of the hydrochloric acid, which stimulates both of these to flow.

The numerous recorded cases of ulcer of the jejunum following gastro-enterostomy, and their persistence of symptoms, if not fatal termination, leads the writer to advise gastro-enterostomy only as a last resort. The neurasthenic individuals who suffer from chronic dyspepsia not only are not benefited by gastro-enterostomy, but are made worse. This also applies to the dyspepsia due to imperfect mastication. The so-called atonic dilatation of the stomach and gastroptosis, either alone or as a part of a general enteroptosis, never are benefited by gastro-enterostomy.

No operation is indicated in acute ulcer, unless perforation is imminent or has occurred, or serious hæmorrhage compels it. Gastro-enterostomy is not indicated in chronic ulcer of the stomach, unless there are repeated small hæmorrhages which menace life, grave adhesions, or persistence of marked symptoms even after prolonged and thorough medical treatment.

Gastro-enterostomy should always be done where the natural evacuation of the stomach is impossible and pyloroplasty or gastro-duodenostomy are not feasible. This includes the cases with mechanical obstruction due to pyloric stenosis, and malformations due to hour-glass contractions or disabling perigastric adhesions. When the operation is done, it is best to close off the pyloric opening. M. M. Portis (Annals of Surgery, December, 1906).

HERNIA, SACCULAR THEORY OF.

This theory rejects the view that hernia can ever be acquired in the pathologic sense, and maintains that the presence of a developmental peritoneal diverticulum or sac is a necessary antecedent condition in every case of ordinary abdominal hernia. The author states that this theory bids us to abandon all recent devices; it demonstrates the reason why all operations that have hitherto been devised have yielded imperfect results. It places the finger not merely on the defects of all operations for hernia: it denies that any formal operation, such as could be associated with the name of a particular surgeon, can be of real and comprehensive utility. It answers the obvious comment that will be made on this last statement, to the effect that excellent results are ob-

tained by various operations, by pointing out that the excellent results occur only in the cases in which the sac happens to be perfectly removed. It presents us incidentally with a curious seeming paradox; for while on the one hand it shows that there can be no such thing as an operation for hernia, it assures us, on the other hand, that there can be no such thing as a hernia that is not curable by operation. It promises practically perfect results in the future, far more perfect, at any rate, than have ever yet been attained by any operator or operation; but it imposes the three following conditions: First, the surgeon should concern himself with the peritoneo-fascial layer of the abdominal wall alone. Second, he should be prepared for the recognition of any and every variety of hernial sac, and ready with the appropriate measures for dealing with each. Finally (and this will follow naturally from the former two), he should fully recognize that in the event of recurrence, the explanation is not to be found in the weakness of the patient's muscle, but must be sought a little nearer home. R. H. Russell (Lancet, November 3, 1906).

INTESTINAL OBSTRUCTION, DELIRIUM AFTER RELIEF OF.

Attention is drawn by the author to the occurrence of severe and fatal nervous symptoms in patients who have been relieved of intestinal obstruction. He publishes three cases of his own and refers to three others known to him. The sequence of events is briefly as follows: First, the signs and symptoms of intestinal obstruction, then relief either by medical or surgical means (mostly surgical), subsequent free fæcal discharge and apparent convalescence, and then the sudden appearance, four or five days after, of severe nervous symptoms, especially delirium, suppression of urine, and death. In two of the author's cases a post-mortem examination was made, and everything appeared quite satisfactory from the surgical point of view—no peritonitis and the wound healing normally (one was a case of volvulus and the other a strangulated hernia)—no question of septic infection arose. The most probable explanation of these cases (which are, perhaps, more common than is realized) is that they are due to toxic absorption from the dammed-up fæcal matter. What the exact toxin is, whether from bacillus coli or H_2S, is uncertain, and further researches are required to clear up this point. Meantime, the treatment is to try and eliminate this poison as quickly as possible by oily purgatives, and purify the blood by hypodermolysis. Capasso (Riforma Medica, July 1, 1906; British Medical Journal, November 24, 1906).

INTRACRANIAL INJURY, EARLY OPERATION IN.

Epidural hæmorrhage demands operation in such cases as do not obviously tend to spontaneous recovery, or in which a fatal issue is so imminent as to permit no question.

Meningeal contusion, when productive of symptoms, either cannot be diagnosticated from an epidural hæmorrhage, or is indistinguishable from the diffuse cerebral œdema with which it is always associated. A recognized intracranial hæmorrhage may be expected to be of pial origin when associated with cerebral lesions, and will indicate operation when the cerebral lesion is regarded as of minor importance.

Cerebral contusion. (*a*) Limited—no tendency to a fatal termination, and never suggests operation. (*b*) Diffuse—

two classes of cases; in one, a vascular disturbance incapable of self-limitation, not markedly involving the integrity of the cerebral cells, but tending to mechanically destroy their function; in the other, a progressive disintegration of cellular structure, an active process due to chemical changes, which natural forces prove insufficient to restrain. In the first, operation is theoretically indicated; in the second, in view of the origin and nature of the pathic changes, there is no reason to suppose a simple relief of pressure will stay their proggress. In neither is it possible to fix the time when operation may so supplement natural forces and simpler remedial measures as to increase the patient's chances of recovery.

Mixed cases—cerebral contusion complicated with pial or epidural hæmorrhage. Operation should depend upon the estimated relative importance of the lesions; and the correctness of this estimate must depend upon the acumen and experience of the surgeon. Charles Phelps (Annals of Surgery, December, 1906).

LARYNGEAL CANCER, THYROTOMY AND LARYNGECTOMY IN.

Thyrotomy is the operation of election for early intrinsic laryngeal malignant disease. Until a therapeutic cure shall have been discovered, surgery cannot hope for better results than this operation yields, if done only in intrinsic disease of very limited extent. Laryngectomy is advisable in all cases extrinsic by origin or extension, provided the patient is in vigorous health.

The writer states that there is no such thing as absolute ultimate cure of malignancy. Recurrence may take place after many years. For the purpose of comparing the relative efficiency of operative methods, freedom from recurrence for one year indicates adequate removal. Varying periods thereafter indicate varying degrees of vulnerability, not repullulation of the primary process from operative inefficiency. If cancer can reappear in the stomach seven years after removal of cancer of the larynx, there is no reason why it should not reappear in the neck or the scar, where it would be called a "recurrence" rather than a "reinfection."

No operation other than a palliative one is justifiable in a patient of feeble general health, nor in one in good condition if he have metastasis or organic disease. Hence, in only a few cases is operation justifiable at the time they come under observation. If this rule be adhered to in the selection of the case, and a careful technique, preoperative and postoperative, as well as operative, the mortality of laryngectomy can be reduced to a point where any surgeon will not hesitate to advise it. The mortality must always be considerable. It is not possible to reduce it to *nil*, and it is only so in this series by reason of the small number of cases.

One of the greatest factors in the production of operative shock in laryngectomy, as shown by the sphygmomanometer, is the tugging of the œsophagus while the larynx is being freed. This can be minimized by clean cutting without tugging or dry dissection, and by a minimum of displacement of the œsophagus. Cocaine assists. Shock, sepsis, and pneumonia can be minimized by perfection of technic, and should they occur the chances of recovery are good if the patient be in good general condition. Routine surgery and routine after-care invite mortality.

Preoperative microscopy is often of aid in diagnosis, but it involves some

risk of metastasis. It is better, in any case of doubtful laryngeal neoplasm deemed operable, to remove by thyrotomy the entire growth with its bed of normal tissue, and let the subsequent management of the case be determined by the then dependable report of the histological examination. When desired, a specimen may be taken in some cases by the self-illuminating tracheoscope, or through the tracheotomy wound. While the surgery of malignant disease is discouraging, it need be so, in the larynx, only in default of an early diagnosis. Chevalier Jackson (British Medical Journal, November 24, 1906).

LARYNGEAL TUBERCULOSIS, TREATMENT OF.

When the accompanying pulmonary lesion is so far advanced or so rapidly progressing that a restoration to some degree of health and comfort cannot be looked for, the treatment of the laryngeal affection should be entirely symptomatic; where there are no severe symptoms it is both useless and cruel to submit the patient to active treatment either with cutting instruments or strong caustic pigments. Such cases make up a large proportion of all the cases of tuberculous laryngitis which come under the author's care. He finds that antiseptic and caustic pigments are of great value in promoting the healing of ulcers and the shrinkage of granulations, but they have little or no effect on massive infiltration lying beneath unbroken epithelium; they must be applied under guidance with the mirror, on a strong cotton-wool mop, and must be thoroughly and forcibly rubbed into the affected parts. The secret of success lies in their proper application, and a light painting on of pigments is of little use. Among the many drugs employed in this way lactic acid still holds its place; it must be used in sufficient concentration, and for some time the writer has employed almost exclusively a mixture introduced by Lake, consisting of lactic acid 50 per cent., formalin 7 per cent., and carbolic acid 10 per cent.

No local anæsthetic is necessary before the application of pigments; the frequent use of cocaine has a most harmful effect on the appetite and the general health. At the most, in very irritable cases a little 5-per-cent. solution of cocaine to the pharynx may be employed until the patient becomes used to the manipulation. Before surgical operations thorough anæsthetization is necessary. For this purpose the writer sprays a little 10-per-cent. cocaine on the pharynx, and then from a curved syringe, guided by the mirror, drops a little of the same solution on the epiglottis and on the part to be operated on; after an interval of five minutes he repeats this, and after a similar interval performs the operation. In this way the cocaine is only applied where it is wanted and, very little being used, he has never seen bad effects; the method is pleasant to the patient and does not cause coughing or irritation. H. Barwell (Lancet, November 10, 1906).

LONGEVITY.

The author considers the nature of the risks which old people run, and how they may be best foreseen and averted so that great activity in advanced years may become the rule instead of the exception. These risks may be divided into (*a*) those which arise from external influences, and (*b*) those which originate in the body itself. Of course the action of both classes of cases may be combined. The introduction of anti-

septic methods in surgery is reducing the number of deaths from septic infection, and so increasing longevity. This is especially true as regards disease of the bladder and the introduction of prostatectomy. Erysipelas is a common cause of death among the aged, and should be greatly diminished by antiseptic measures. Respiratory diseases carry off many aged persons; while they are usually consequent upon exposure to cold, yet pathological organisms play the most important part. Many so-called common colds are very infectious and readily transmitted. Dust is a most important factor in the causation of colds. So that aged people should be protected from dust, from cold, and from sudden changes of temperature and draughts. Wind fairly in the face is little to be dreaded, but at the back of the neck or at the side of the head it is much more dangerous. But one of the most important methods of securing health is to increase the patient's power of resistance. The peripheral vessels of the whole body should be trained to alternate with heat and cold; this is best done by daily baths, exercise, and walking. In old age intestinal diseases of bacterial origin are comparatively rare. Cancer is a common cause of death among the aged; it cannot be said at present how much faulty nutrition has to do with this. But diet has a most important effect upon diseases of the circulation, which are more fatal among the aged than even cancer. Arteriosclerosis with its attendant evils, is the greatest enemy of longevity, and arteriosclerosis is the result of heightened blood-pressure, which, in turn, is most often due to faulty diet, excessive use of meat, strong soups, etc. The blood-pressure should be kept down, and life will be prolonged. Cholagogues and purgatives, potassium iodide, the nitrites and nitrates are all useful to this end. Sir Lauder Brunton (Lancet, November 17, 1906).

MALARIA, TRANSMISSION OF.

Further arguments are presented by the writer to prove that malaria must be transmitted by some other means than by mosquitoes exclusively. Among the facts cited are Kourlow's experience at Tomsk, in Siberia, where malarial infection is observed during March and April, while the temperature is still below the freezing point, and no mosquitoes are to be found at that season. Similar observations have been reported from other parts of Siberia. Grawitz has also stated that among the German troops stationed in malarial districts the epidemics of malaria occur in March and April, with the maximum in June, and decline during August and September. There are no mosquitoes during the early spring, while they abound during the months when the epidemics die out. Plehn writes from Cameroon, in Africa, that mosquitoes are rare there. Prizes were offered for the anopheles, with fines for houses in which specimens were found, but less than two dozen were encountered during a whole year. And yet, the writer states, there is nowhere throughout the world, a more redoubtable focus of malaria than that colony. Kelsch (Bulletin de l'Academie de Médicine, Paris, Vol. lxx, No. 36; Journal of the American Medical Association, December 15, 1906).

MERCURIAL TREATMENT, AVOIDANCE OF ENTERITIS DURING.

On several occasions the writer has observed alarmingly acute hæmorrhagic enteritis develop in the course of mercurial treatment, frequently intractable

to all ordinary measures. His attention was called to a statement of Kobert's in regard to the remarkable tolerance of opium-eaters for corrosive sublimate. He has known an instance in which 1.8 gram of corrosive sublimate was taken daily by an opium-eater without untoward effects. This is ascribed to some combination of the opium and the sublimate in the intestines, resulting in an insoluble compound which is harmlessly evacuated. The writer applied the knowledge thus learned to the treatment of enteritis, and found that opium, given at the first symptoms, immediately arrested the trouble. All the symptoms subside at once and no further complications are observed. The mercurial treatment can be continued without further mishap. The author now warns patients commencing the mercurial treatment, of the possibility of acute hæmorrhagic enteritis from the effects of the mercury, and gives them some opium drops to take if symptoms develop. His experience has been invariably favorable. Harttung (Dermatologische Zeitschrift, Bd. xiii, Nu. 1; Journal of the American Medical Association, November 24, 1906).

MIGRAINE, TREATMENT OF.

Diet regulation is considered important by the author in the management of migraine. Meat should be allowed only once a day, tobacco and alcohol should be prohibited. A regimen of milk and vegetables, with carbonated water, will keep the bowels regular and will prevent attacks. With regard to climate, an elevated region is to be preferred to the seashore. Lesions of the eyes, nose, and genital system should receive appropriate treatment. Cold baths (68° F.) with friction act favorably in non-anæmic patients. Prolonged galvanic and faradic treatment may be followed by cure. Arsenous acid, quinine, and iron (in anæmic subjects) may prove effective. The author highly recomends the following formula: Trinitrine, $1^1/_2$ grains; phosphoric acid and alcohol, of each, $2^1/_2$ drams. Dose, two drops twice daily. In connection with this he advises the following powder to be taken after breakfast for three or four weeks: Sodium bromide, 35 grains; sodium salicylate, 4 grains, aconitine, $^1/_{600}$ grain. If the seizure commonly appears on rising, this powder should be taken at bedtime. Pyramidon, acetphenetidin, or a mixture of lactophenine, $7^1/_2$ grains, and citrated caffeine, 3 grains, are often serviceable. Morphine, if given at all, should be combined with atropine. E. Mendel (Deutsche medizinische Wochenschrift, Nu. 20, S. 785; American Journal Medical Sciences, December, 1906).

NEURASTHENIA, IRON IN.

In certain cases of neurasthenia iron is advocated by the author, on account of its action in changing hæmoglobin into oxyhæmoglobin, and thus oxygenating the most remote cells of the organism. The nervous system, being the most functionally active, has need of most oxygen, and its cells are the first to suffer from an impoverishment of the same. Premising that his first cases were treated quite empirically, the writer states that he has found so much benefit, both in hospital and private practice, from iron used in neurasthenia that his opinion on the subject is now quite decided. While some cases have been markedly anæmic, others have shown either no signs of anæmia or only slight indications, insufficient to account for the severity of the illness, and yet all have been cured by iron. Its ad-

ministration should be combined with that of hydrochloric acid, to improve digestion, and, in following up the course of treatment with natural mineral waters, the writer selects preferably those of Saint-Parèze, which contain salts of lime and manganese, to prevent constipation. Lamoine (Progrès Médical, September 8, 1906; British Medical Journal, December 8, 1906).

NUCLEIN IN THE ANIMAL ECONOMY, ROLE OF.

In the nucleins the probable antecedents of all the purin bodies, including uric acid, and very rich in phosphorus, are widely distributed, but are especially prevalent in the nuclei of cells; hence glandular organs, such as the pancreas and the liver, made up, for the most part, of masses of cells, contain relatively large amounts. But the fluid constituents of the body also contain them in variable quantities. They are acids, have most remarkable physical and chemical properties, and stand in a class by themselves. One of their most striking characteristics is their invulnerability to the action of gastric juice; about the action of intestinal digestive fluid upon them there is a conflict of opinion, but the latest researches indicate that the nucleinic acids are somewhat changed by trypsin. It is an entirely unsettled question as to whether the nucleins are absolutely indigestible or not. If they are indigestible, they are certainly unabsorbable, and our present conception of their rôle in dietetics would be entirely wrong. If the nucleins of food are finally proved to be indigestible, the only possible source of the nucleoproteids would be a synthesis from other proteids. The possibility of the synthesis of nucleins must be admitted on the basis of certain observations on the lower animals. They are also decomposed, to a certain extent, by boiling with water, and the ordinary culinary processes may liberate varying quantities of purin bodies, which are, of course, readily soluble and absorbable. In the presence of an acid, the cleavage is more rapid and complete. If the uncooked nucleins are entirely indigestible, then raw meat, if parasitic ova could be excluded, would furnish for the body a purin-free proteid food. On the other hand, the purin bodies can be very largely removed from finely comminuted cooked meat by repeated washings. Finally, they appear to be both germicidal, and in some of their cleavage products toxic in character. G. W. McCaskey (Journal of the American Medical Association, December 1, 1906).

OPSONIC INDEX IN MEDICINE.

In reviewing the work which has already been accomplished on opsonins, the authors state that the question of what practical use they may have is one of greatest interest. The great difficulty will arise from the fact, probably, that changes more or less profound are indicated at times by only slight variations of the indices, and that the variation is frequently not far beyond the limits of error in a method where opportunities for small errors in technics are numerous. Some aid in diagnosis may be had by determination of single indices; but before this can be considered a reliable method considerable work must be done to determine the degree of specificity of opsonins. Wright and Reid's work indicates that some diagnostic aid may be obtained by comparison of serum and exudates, and by the methods of heated and unheated serum. A wider field of application will probably be in the control of inoculation

of vaccines, to determine the optimum dosage and regulation of frequency of the same, but this will be somewhat limited by the clinical difficulties of the method. A field as yet but little explored, in which it may prove of great use, is in the determination of susceptibility to infection, especially in the inherited susceptibility of tuberculosis. Perhaps its greatest usefulness will be found in the laboratory, where it may prove to be a convenient and rapid method of testing the virulence of organisms and the strength of sera which are dependent on opsonins for their beneficial effects. N. B. Potter, N. E. Ditman, and E. E. Bradley (Journal of the American Medical Association, December 1, 1906).

PNEUMONIA, ARSENIC IN.

In the ten cases reported by the writer, the medication consisted essentially in the use of large doses of Fowler's solution of arsenic. In some cases nothing else was employed, and it was found that enormous doses of the drug were tolerated in a most surprising manner. Five minims, every two or three hours, were given in these cases for several days without the slightest evidence, either proximate or remote, of arsenical poisoning. In fact, it seemed that these patients showed the same tolerance of arsenic that malarial patients show of quinine, or that syphilitics do of mercury or iodide. Aside from the absence of untoward symptoms, there seemed to be positive results in the control of the toxæmic symptoms of pneumonia. In several of the cases there was a decided break in the temperature about forty-eight hours after the beginning of medication. T. F. J. Dunn (New York Medical Journal, December 1, 1906).

POSTPARTUM HÆMORRHAGE, PROPHYLACTIC TREATMENT OF.

After a normal labor there is no postpartum hæmorrhage, the natural preventive forces, contraction, retraction, and coagulation, being efficient. Anything which interferes with these forces will favor hæmorrhage. Compression of the abdominal aorta will arrest hæmorrhage, but the author believes that shutting off the blood-supply of the muscle will interfere with proper contraction and retraction.

Prophylaxis to prevent hæmorrhage should consist in the removal or treatment of the possible causes. Hæmophilia is one of the occasional causes, and should be overcome by treatment with arsenic, strychnine, and calcium chloride. Precautions should be taken to prevent protraction of the first two stages of labor, while the third stage should be as gradual as is consistent with safety. In the presence of hydramnios or multiple pregnancy, the emptying of the uterus should be gradual, to insure adequate contraction and retraction; the second stage should, therefore, be delayed as much as possible. If the patient has renal disease or syphilis, the third stage should be delayed on account of the fibrous bands which are frequently present between the uterus and placenta. Hæmorrhage in such cases should call for immediate removal of the placenta. Precipitate labor predisposes to postpartum hæmorrhage; the same is true of forcible manipulation of the uterus to expel the placenta. As a general rule, the author advises that no interference with the placenta be attempted for forty to sixty minutes after the termination of the second stage of labor. G. W. Fitzgerald (Practitioner, November, 1906).

PROSTATIC ENLARGEMENT.

Cases of enlargement of the prostate are classified by the authors as follows: (1) Those cases, seen early, where the only symptom is obstruction to the urinary outflow due to an enlarged prostate, there being no cystitis or pyelitis, and the patient otherwise healthy, with good arteries. The risks of operation are not great and radical interference should be advised. (2) Cases in which the patient is a physical wreck, with little or no ability to void urine, with outflow, cystitis, and perhaps pyelitis, and with sclerosed vessels. Here a radical operation is out of the question, and the Bottini instrument in skilled hands may be used with great benefit. When a calculus is present, it should be removed by suprapubic cystotomy, followed by the use of the Bottini instrument. (3) Between the extremes of 1 and 2 are cases which should be given the benefit of operation. When the middle lobe is the chief offender, the suprapubic route should be adopted. But when the mass encroaches but little on the bladder, the perineal route is indicated. The anteoperative and postoperative treatment is most important. Uræmia and shock are the common causes of death.

Thomas holds that in enucleation of the prostate there is no choice between the suprapubic and perineal routes as far as the mortality is concerned. Both are sometimes followed by bad results (fistula, stricture, etc.), but the chances of complete recovery are about 14 per cent. better by the suprapubic route. In bad septic cases the operation should be done in two stages. The suprapubic route is better for tumors of the middle lobe, for removal of calculi, and for the control of hæmorrhage, but is unsuitable for surgeons with short fingers or flexible thin nails. There is no post-mortem evidence that the whole prostate has ever been removed. It is impossible to remove the prostate in one mass without also removing with it the prostatic urethra. G. A. Bingham, C. B. Shuttleworth, and J. L. Thomas (British Medical Journal, November 10, 1906).

RADIUM, ACTION OF, ON MALIGNANT NEOPLASMS.

In the whole range of experimental medicine, the writer states there is nothing better authenticated than the fact that a small superficial neoplasm—be it lupus, rodent ulcer, or epithelioma—may be destroyed by the radiations of radium. A wart, a lupus nodule, a syphilitic infiltration, a rodent ulcer, or a patch of epithelioma, simply wilts and withers away under the influence of the Becquerel rays, like an uprooted weed under the action of sunlight.

As regards cancer, there are apparently two stages during which radium treatment is particularly indicated: during the very early stage, when the young and immature neoplasm is struggling to develop amid the normal cells; and at a later stage, when ulceration and partial destruction of the neoplasm have already commenced. In the former stage minimal doses of the radiations are indicated, since it is our endeavor to differentiate between normal and abnormal tissue, avoiding as much as possible any disturbance of the healthy cells.

In radium therapy the question of technics is one of the greatest. The first factor is the activity of the radium preparation; the second, the quantity of the radioactive salt employed; the third, the frequency and duration of the ex-

posure; and last, but not least, the form and material of the radium cell. Information on any one of these questions is still in a very nebulous condition. W. D. Butcher (Archives of the Roentgen Ray, November, 1906).

RECTAL ALIMENTATION.

With rectal enemata a very considerable amount of nourishment can be introduced into the body, especially as the present state of surgery makes it only a temporary measure. Water is easily absorbed; sugar, especially grape-sugar, very readily, as are the salts. There is very little absorption of fats; as regards proteids, peptonized foods, such as somatose and powdered casein, are absorbed in sufficient quantities to maintain a nitrogenous equilibrium, for a short while at least. Water alone, as enema, can supply the body needs for as long a period as is usually required. These injections do not call forth the flow of gastric juice which an ordinary nutritive enema does, and, therefore, are better for an ulcerous condition of the stomach. S. J. Sharkey (Lancet, November 10, 1906).

RHEUMATISM, SALICYLATES IN.

There can be no doubt that salicylic acid and its compounds have a specific effect in acute rheumatism, but they are given usually in too small doses; from 90 to 160 grains should be given daily, and much larger doses at the outset. The drug should be administered frequently, as it is eliminated very rapidly. It is often impossible to push it, owing to the production of deafness and other symptoms, due to an action on the nerve-centers. It works best in the joint-cases because it is excreted readily into the joint cavity from the blood. Where the disease affects fibrous tissues, however, its action is much less rapid and powerful.

Early treatment with sufficiently large doses greatly lessens the risk of acquiring valvular disease and chronic fibrositis, and also diminishes the frequency of prolonged subacute fever and of relapses, as these last are due to organisms surviving in the fibrous tissue. Besides internal administration of sodium salicylate, the free local application of methyl salicylate externally is of great value. R. Stockman (British Medical Journal, November 24, 1906).

RHINITIS IN INFANTS.

The importance of curing rhinitis in infants is emphasized by the writer's experience in 18 cases. In some cases death followed the purulent rhinitis without any complications; in some others, pyæmia with purulent peritonitis, was the outcome. The obstruction to breathing and nursing is only a small part of the disturbances due to rhinitis in young infants. As the infant is compelled to breathe through its mouth, while throat and tonsils are still undeveloped, the danger of infection becomes much greater. Vaginal infection during birth, he states, is probably responsible for a number of cases of rhinitis. Since the introduction of the suprarenal preparations the infants' condition can be much improved, especially if the secretions are aspirated from the nose beforehand. A few drops of a 1-per-cent. silver-nitrate solution or of 3-per-cent. peroxide of hydrogen afterward will be found useful. On suspicion of diphtheria, antitoxin should be injected without waiting for bacteriologic confirmation. Six of the author's 18 cases terminated fatally. Streptococci and staphylococci were found in these cases. F. von Torday (Jahrbuch

für Kinderheilkunde, Bd. lxiv, No. 2; Journal of the American Medical Association, December 1, 1906).

RICKETS, CONGENITAL.

Any toxic or infectious cause acting on the bones at a certain stage of their development during the last months of intrauterine life or the first or second year of infancy may create rachitis, provided that its action in this line is rendered possible by some native predisposition, the nature of which is still a mystery, but which is sometimes revealed by the multiplicity of cases of rachitis in the same family. The author accepts four forms of rachitis: the latent congenital; the pronounced form, in which the children are born dead or nonviable; the form in which the deformities in the bones are extensive and characteristic, but do not continue a progressive course after birth, and gradually subside toward the end of the second year; and a fourth variety, in which the only sign of the condition at birth is the softening of the bones of the skull, especially the occipital bone. This true craniotabes may be isolated or accompanied by a slight protrusion of the anterior end of the ribs. In this form the rachitis continues a progressive course, as a rule, and characteristic deformities of the skull, thorax, and limbs develop later. However, if the child escapes serious infections and is well cared for, the rachitis may remain insignificant, and disappear finally without leaving definite deformity. In the two last-mentioned forms the children are generally born before term, with a weight inferior to normal, and with more or less pronounced anæmia during their first two years of life. In almost every instance of congenital rachitis, the mother has had infections, intoxications, or has been overworked during her pregnancy. Inherited syphilis has also been incriminated. A. B. Marfan (Semaine Médicale, Vol. xxvi, Nos. 40-41; Journal of the American Medical Association, December 1, 1906).

SCIATICA, HYPODERMIC INJECTION OF OXYGEN IN.

The successful treatment of obstinate cases of sciatica by the hypodermic injection of oxygen is described by the authors. They do not attach much value to the theories by which such treatment is supposed to act by stretching the terminal nerve-filaments or by forming a protective cushion of gas over the nerve-endings. They explain sciatica and other neuralgias as a result of disordered metabolism, the by-products of which poison the nerves. The absence or presence of neuritis is thus simply a question of degree. They state that the frequent injection of oxygen under the skin and deeply amongst the muscles influences the local and also the general metabolism, stimulating the circulation in the nerve-trunks and the nerve-sheaths, and thus facilitating the elimination of morbid products. By experiments on the cadaver and on animals they have satisfied themselves that oxygen injected by their method spreads deeply and comes in contact with the nerve-trunk near the place of injection.

The result of treatment is two-fold—the immediate relief of the pain and the improvement of the anatomical condition of the nerve. All the cases treated were severe, either in the intensity of the pains or from their long duration. Twenty cases are recorded. Nine were completely cured in less than a month after ten or twelve injections, the quantity of each being from 250 to 400 cubic centimeters of gas. The other 11

cases were completely cured in less than two months. Each injection was made deeply with the long needle of a Pravaz syringe, inserted usually into the most painful point of the skin. The needle communicated by means of an India-rubber tube with a gasogene. Antiseptic precautions were employed, and no ill effects, local or general, followed in any case. A case reported was that of a man, aged 43, who entered the hospital after suffering for six years from right sciatica. For two months he was treated without benefit by blisters and frictions. Pressure along the sciatic nerve was very painful, especially between the trochanter and the tuberosity of the ischium, at the outer side of the hip, and over the external malleolus. Six injections of oxygen were made at the most painful spots, and three deeply over the course of the sciatic between the muscles. Cure followed, and was complete in twenty-two days. R. Massalongo and D. Danio (Il Policlinico, September, 1906; British Medical Journal, November 3, 1906).

SODIUM SULPHATE AS AN INTESTINAL ANTISEPTIC.

Some suggestive remarks are made by J. Maberly in the Lancet of November 10th, regarding the true antiseptic action of sodium sulphate in intestinal toxæmia. Happening to employ the remedy in cases of dysentery, with a view to free but gentle purgation, he noticed that in the dosage ordinarily used for such purgation the latter was not necessarily produced. In fact, in the most successful cases the evacuations became less frequent and assumed their normal color and consistency. These results led him to believe that the action of the remedy under the conditions named was referable to qualities other than purgative. He, therefore, began to use the drug in cases of infantile diarrhœa, and found that if the dose was reduced below the aperient effect the evacuations became less frequent, and often assumed a normal character without other medication. Also it was observed that vomiting quickly ceased. Milk diet was, of course, avoided as much as possible. Since obtaining such results he has relied more and more on sodium sulphate in treating all septic bowel conditions, and has become convinced that if the remedy is given in proper doses it is a true intestinal antiseptic, but to obtain this effect we must avoid doses having an aperient action. He also noted similarly good effects in typhoid fever. The effect on the bowel was as in the other conditions, and as a secondary effect the temperature curve was lowered, and the whole disease assumed a more benign aspect.

In some cases these good results did not follow, and the author suggests that perhaps in these cases there may have been some obscure alteration in the mucosa, interfering with the normal splitting up of the salt. Maberly is of the opinion that the antiseptic action is due to the setting free of oxygen during the process of chemical decomposition of the drug in the bowel. Experiments by Hay have already shown that sodium sulphate produces copious intestinal secretion, according to the amount of the dose and the strength of the solution. He showed further that the sulphate was split up in the intestines; the acid, being more easily absorbed than the base, disappeared partially from the small intestines, to return shortly afterwards. In the meantime the base was gradually undergoing absorption and excretion by the kidneys, and never pursued the same peculiar

course of absorption and reëxcretion as the acid. That portion of the salt which remained within the bowel unchanged caused the secretion of intestinal mucous fluid and consequent purgation, and not the portion absorbed into the blood. Editorial (Medical Record, December 15, 1906).

SPINAL CURVATURE, HABITUAL LATERAL.

Anatomic studies teach that certain pathologic forms of numerical variation of the spine may cause certain kinds of lateral deformities. The x-rays show that corresponding clinical types of habitual lateral curvature in the great majority of cases show the variation expected at the seat of the primary curve. Habitual scoliosis manifests itself at the very time at which physiologic growth and changes allow the appearance of curves, based on a varying development. The different affection of the two sides of the spine in habitual lateral curvature corresponds with the peculiar relation of the right and left sides of the spine to the numerical variation. Based on these arguments and on the fact that in 16 out of 20 cases of so-called habitual scoliosis those pathologic types of variation were found at the primary seat of the deformity present, the writer believes the following statement to be justified: That developmental error of the human body occurring in embryonic life, which has its morphologic expression in the so-called numerical variation of the spine, causes, under certain circumstances, those idiopathic lateral deformities of the spine which manifest themselves in the first half of the second decade of life, and which hitherto have been considered as affections acquired in postnatal life, owing to purely functional or functional-osteopathic conditions. It seems to be the etiologic factor of habitual lateral curvature, better now to be called delayed congenital scoliosis or scoliosis congenitalis tarda. M. Böhm (Boston Medical and Surgical Journal, November 22, 1906).

SPONDYLITIS, TYPHOID.

In certain instances of typhoidal spondylitis there are definite bony changes in the vertebræ. The general features of the condition suggest the probability of organic changes in the spine of some degree being a usual occurrence. The similarity of the changes found in typhoid spondylitis and those in the spondylitis found in other infections, especially arthritis deformans, suggests that the latter may be due to various infective agents. Thomas McCrae (American Journal Medical Sciences, December, 1906).

TRYPSIN FOR THE CURE OF CANCER.

The writer has instituted, since April, a series of experiments with a view to testing trypsin for the cure of cancer, consisting in the consecutive use of trypsin in a series of about thirty cases. He comes to the conclusion that trypsin deserves further trial, but reserves his opinion as to its actual therapeutic value until he can speak from a larger experience. Beard, of Edinburgh, who is proposer of this method, believes that the cancer cell differs from other cells solely in the characteristic that it is a latent and aberrant germ-cell unmodified as it should have been in the ordinary course of the development of the embryo. It is thus not a somatic cell, but one which, in the life cycle of the development of the embryo, should have "degenerated" and passed out of existence. The thing that should have destroyed it, at about the sixth

week of the life of the embryo, is the pancreatic juice from which trypsin is extracted. Certain of these germ-cells, undestroyed by the pancreatic juice of the embryo, become located in various out-of-the-way corners of the growing human being, and later on, under favoring circumstances, propagate themselves and thus produce what is called cancer. Therefore, pancreatic juice should be administered hypodermically and in excess to the patient to destroy these "germ" or cancer cells, and pancreatic diastase (amylopsin) should be administered independently of the proteolytic and fat-splitting ferments (trypsin and lipase).

Among the conclusions of the author may be mentioned: Rigors and increased temperature following within a few hours the injection of trypsin are an encouraging sign, since they indicate that the cancer has been attacked by the trypsin. The symptoms are due to the toxic action of absorbed and destroyed cancer products. Trypsin has a decided effect in reducing cancer cachexia and in improving the general health. The result of the trypsin treatment in many instances demonstrates that even in severe cancer of the uterus, involving the associated pelvic organs, the disease may be brought to a halt, so to speak, even if the patients do not eventually recover. The use of trypsin has caused hæmorrhages to cease and has alleviated pain.

It is a fact that the patients frequently refer their greatest feeling of improvement to the period of time when they are taking amylopsin following trypsin. An important, as well as a difficult, feature of the treatment, therefore, is reasonably to determine the proper time to administer the diastatic ferment as well as the requisite amount, following or during the use of the trypsin. It has seemed to the author that the pure diastase (injectio amylopsini) has much to do with favorable results. W. J. Morton (Medical Record, December 8, 1906).

TYPHOID FEVER TREATED BY SULPHATE OF COPPER.

The treatment of the cases reported by the author consisted in the systematic use of sulphate of copper. A patient was placed on two-drop doses of a 6-per-cent. solution of sulphate of copper in one-half glass of water every two hours, day and night. In case the stomach proved intolerant, the dose was reduced to one drop in one-half glass of water every two hours. It occasionally happened that it was necessary to reduce the dose still more, making it only one-half drop once in two hours. The drops of a 6-per-cent. solution contain about $^1/_8$ grain of the sulphate. In point of fact, the majority of the patients could take about one drop every two hours. Patients who were seen during the first two or three days of the onset of the disease received large colonic flushings of sulphate-of-copper solution once in three hours for two days. In these injections 5 grains to the quart were used. If this proved irritant, a less quantity was to be used in subsequent flushings. If the tongue became dry, which it seldom did, the copper solution was moderately acidulated with sulphuric acid.

The diet was uniformly buttermilk, a glass once in four hours. Between the buttermilk, soups were sometimes permitted to be given, carefully prepared, skimmed and strained. Fruit-juices were invariably given, following somewhat the desire of the patient as to which particular one. Tomato-juice, a wineglassful every two hours or three,

in the majority of cases proved to be very acceptable and certainly very beneficial. The temperature was reduced, when necessary, by general sponging and ice-bags to the abdomen. General nursing measures were instituted as individual cases demanded. When the disease abated, temperature became normal, tongue cleared, patient became bright, with conditions generally pointing to the immediate nearness of convalescence, the copper was dropped and the patient given $^1/_{240}$ of a grain of strychnine once in three or four hours. After the temperature had been normal about eight or ten days, the pulp of a baked apple, a little rice, tapioca, soft-boiled eggs, junket, blanc mange, etc., were gradually introduced into the diet until perfectly normal conditions called for the food of health. This entire list of cases was characterized by an evenness that was very gratifying. J. F. Stevens (Western Medical Review, November, 1906).

URÆMIA, TREATMENT OF.

Cases of uræmia are divided by the writer into three classes: (1) Those occurring in patients with previously normal kidneys, the attack coming on with great suddenness during the course of an infectious disease. There is anuria, with abundant albumin, blood, and the bodily temperature is elevated. A toxic substance, produced by bacteria, is the primary cause. (2) Those with a history of previous disturbance of the kidneys, coming on suddenly during an infectious disease or after an alcoholic debauch, and likewise due to bacterial toxins. The urea percentage of the blood is high, the amount of urine normal, and there is no cardiovascular change. (3) Those associated with chronic nephritis and renal insufficiency, the symptoms being those of chronic uræmia. The urea percentage of the blood is high, cardiovascular changes are present.

Uræmic convulsions can be temporarily controlled by chloroform inhalations. Morphine is often of value, but must be carefully watched. Coma with high tension is best treated by venesection or rapid catharsis; when the tension is low, digitalis is indicated. Uræmic dyspnœa is a form of convulsive spasm, and should be so treated. The eliminative function of the kidney should be furthered from the start; aconite, digitalis, and caffeine are all of value. No potassium salts should be used. Uræmic diarrhœa is an attempt at elimination, and should not be checked. Elimination by the skin (hot packs and baths) is very important; pilocarpine is unsafe. The removal of the toxins can be best brought about by venesection; the electric light bath is also of great service. E. Le Fevre (British Medical Journal, November 24, 1906).

URETHRITIS, CHRONIC, TREATMENT OF.

The writer describes his method of applying medication to the urethra, by which he forestalls a stricture following chronic urethritis. The medication consists of ichthyol, one drachm; resorcin, forty grains; balsam of Peru, three drachms; castor oil, q. s. to four ounces —or lymol, one drachm; balsam copaiba, one drachm; castor oil, one ounce; olive oil, q. s. to four ounces. He selects a tube as he would select a sound, and a cord which is inserted in the handle end of the tube and forced through the tube by the obturator. As much of the cord is now pulled out at the distal end as is intended for use. The cord and tube are placed in the medication until the cord is thoroughly sat-

urated. The cord at the handle end is now pulled out until but an inch or so of the saturated part remains in the tube. The cord is then cut at the junction of the medicated and the non-medicated portion. In pulling the cord through the tube it has acted somewhat as a piston and has drawn some of the medication with it. The tube is inserted and passed down the urethra beyond the area to be medicated. The obturator is then inserted into the cord near the distal end and pushed down the full length of the tube, carrying the cord with it, and at the same time forcing ahead into the urethra such medication with it. The tube and obturator are now withdrawn, leaving the cord in position. J. A. Gardner (Medical Record, December 22, 1906).

UTERINE CANCER, SYMPTOMS OF.

More frequent examination and greater watchfulness to detect uterine cancer in its early stages is urged by the author. Irregular discharges should not be considered as a part of the normal menopause, still less a leucorrhœal discharge. Ninety per cent. of cases of cancer of the uterus occur between the ages of forty and fifty; 97 per cent. occur in women who have been pregnant. Irregular bleeding, especially after exertion or coitus, appearance or increase of a leucorrhœal discharge, particularly if blood-tinged, or pelvic pain of more than a few days' duration, all demand investigation. On examination, any distinct necrosis of tissue is almost surely cancer; in any suspicious case, scrapings should be examined microscopically. Popular education as to the significance of bleeding should make earlier diagnosis possible in a great majority of cases. J. G. Clark (Journal of the American Medical Association, December 8, 1906).

GAILLARD'S SOUTHERN MEDICINE.

Lack of space has prevented the insertion, so far, of a notice concerning our esteemed contemporary's removal from Savannah to New York, No. 21 West Ninety-seventh Street. Any one who knows Southern people well, cannot but sympathize with Dr. Fitch when he implies his regret to be called away from them. But inasmuch as "opportunities have been presented to him which he feels it is the part of wisdom to accept," continued success will doubtless repay him. He has our sincere wishes in this connection.

Book Reviews

ESSENTIALS OF HUMAN PHYSIOLOGY. By D. Noel Paton, M.D. Second Edition. 444 Pages. W. T. Keener & Co., Chicago; William Green & Son, London, 1905.

Professor Paton's book is well known, and in the revised form will prove of much use to the student. The author recommends that it be used to supplement practical works and demonstrations, such as are given in Shäfer's work on practical physiology and in the author's own practical course of chemical physiology. He has endeavored to subordinate much of the physiology found in ordinary text-books, and to emphasize others which have a direct bearing upon the study of medicine.

We are glad to see that this work contains a little light at least on proteid absorption. Sajous, four years ago (see "Internal Secretions") held, with Hofmeister and Pohl, that leucocytes were the carriers of food-products, but he showed (what Hofmeister had not done), moreover, that the granulations of leucocytes were converted food-products, and that these

granulations were fed directly to the tissues by these cells. He held that the process of absorption now taught in our text-books was erroneous. Professor Paton evidently holds the same opinion, for he writes: "During the digestion of proteids the number of leucocytes is enormously increased, sometimes to more than double their previous number, and, in all probability, it is they which carry the products of digestion from the intestine. According to the observations of Pohl, the leucocytes are derived from the lymph tissue in the intestinal wall, but more recent experiments tend to show that they come from the bone-marrow, being probably attracted to the intestine by a positive chemiotaxis. By breaking down in the blood-stream they probably set free the proteids for use in the tissues." Sajous holds that the leucocytes do not break down, but that they secrete their granulations, and that these are taken up by the tissue-cells. Professor Paton's book is eminently readable.—J. M. T.

PHYSIOLOGY OF THE NERVOUS SYSTEM. By J. P. Morat, University of Lyons. Translated into English by H. W. Syers, of London. 680 Pages, with 263 Illustrations, 66 in Colors. $7.50. W. T. Keener & Co., Chicago, 1906.

For a work dealing with one specialized subject, a part of general physiology, this work of Morat's is unusually readable. Much of this acceptability is due to the admirable phrasing of the translator. The table of contents is extraordinarily full, occupying twenty pages, and enables the reader to secure a thorough idea of the subjects at a glance. The tendency of the clinician is now to demand more and more of the physiologist, especially as to the finalities of functions. Many of the general works on physiology fail to supply the kind of information which he demands. Nothing is so essential to a right understanding of the governing principles of the body as the elaborate interrelationships furnished by the nerves. Elaborateness is frequently made obscure because of two difficulties: one is because the subject is so vast that it is presented with excessive detail by some writers, and with insufficient thoroughness where space is limited, in consequence of which the student becomes confused, failing to see the points of contact with functional action necessary for the elucidation of every-day problems. In this book the whole subject is presented in a masterly fashion, supplying not only to the advanced scholar necessary data, but to the practical man suitable captions for the application of these manifold facts of daily problems. Speaking from the standpoint of a clinician who has had exceptional opportunities for observation of a large number of concrete problems in neurology, the impression has grown, rather than lessened, that our advanced neurologists are vastly better equipped with a knowledge of neuropathology than neurophysiology. Many endeavors to reach an understanding of inevitable difficulties by questioning these authorities have led to disappointment, for the reasons stated. With the present volume before him the general practitioner can at once learn much that he wishes to know, and which, so far as the experience of the reviewer goes, he can by no means be sure of getting from questioning men who stand high in the department of neurology. It therefore seems obvious that we have now a long-needed reference work which, unlike most books of reference, will encourage frequent consultation, and by the use of which much light will be found upon points made obscure rather than clear in our best text-books on practice.—J. M. T.

FIRST REPORT OF THE CLINIC FOR THE TREATMENT OF COMMUNICABLE PULMONARY DISEASES. Department of Health, City of New York, Thomas Darlington, M.D., Commissioner of Health. John S. Billings, Jr., M.D., Director. 1906.

New York is always the leader in important civic movements, especially in preventive medicine. The work done by their Board of Health is conspicuously praiseworthy. Among the many good pioneer movements they have initiated is the establishment of a "Municipal Clinic for the Communicable Pulmonary Diseases."

Dr. Thomas Darlington deserves personal mention for his broad, prophetic vision, his thorough knowledge of the needs of his department, his tireless energy, and for his practical clinical knowledge. Too often the heads of boards of health are men not familiar with the practical problems in the detail work. The director of this clinic, Mr. John S. Billings, Jr., is a man of unusual equipment also, peculiarly fitted as a laboratory expert, as well as a clinician, to personally direct. Both these men are intimately known by the reviewer to be what they ought to be. The report is a valuable one, full of significant data and useful sug-

gestions in organization, and in the methods to be initiated. It is fully illustrated by pictures, charts, and tables. It is to be hoped that all large cities, and indeed most small ones, will establish similar clinics. When this is done, real results will follow, and soon we may expect the elimination, or at least the full control, of our worst civic scourges.—J. M. T.

THE CHAUTAUQUA SCHOOL OF NURSING. Twenty-six Lectures. Jamestown, N. Y.

This series of lectures has been most beautifully published, and is arranged so as to be inserted in a flexible binder. A large number of illustrations, chiefly anatomical, have been inserted, and represent a high grade of artistic work. The object of these lectures is to provide the so-called untrained nurse with careful, systematized instructions which will assist her in securing that very necessary general knowledge, the lack of which places her at so great a disadvantage as compared with the graduate of the training school. There are two distinct classes of nurses—the graduate trained nurse, who can command wages from $20 to $40 per week, and the untrained nurse, who has perhaps drifted into her profession through a sympathetic response in time of stress to the clamorous demands of some of her immediate friends, usually people who are unable to pay the current rate of wages for the graduate nurse. Naturally, this latter class of nurses have demonstrated, by thus rallying to the assistance of their friends, that particular quality which would normally be expected of the professional nurse—sympathy and a desire to be of service. The Chautauqua School of Nursing has been established to provide for these untrained but naturally efficient nurses as much of the technical training so necessary in that profession as can be taught through correspondence and home study. The various lectures begin with a description of the ideal nurse, followed by chapters relating to the circulatory system, respiration, digestion, nutrition, excretion, urinary tests, the special senses, care of the sick-room, significance of symptoms, records, baths, disinfection, and care of patients suffering from various disorders, the final chapters discussing gymnastics, massage, therapeutics, etc. Altogether, this course of lectures would seem to be admirably adapted to the purpose for which they are designed.

Books and Monographs Received

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"A Practical Treatise on Materia Medica and Therapeutics." By John V. Shoemaker. Sixth Edition. 1906.——"Transactions of the Third Annual Conference of State and Territorial Health Officers, with the United States Public Health and Marine-hospital Service. Washington, May 15, 1905."——"Transactions of the Fourth Annual Conference of State and Territorial Health Officers, with the United States Public Health and Marine-hospital Service. Washington, May 23, 1906."——"Tuberculosis Work in Europe." By Joseph Walsh. 1906.——"The Cure of Chronic Suppuration of the Middle Ear without Removal of the Drum or Ossicles, or Loss of Hearing." By C. J. Heath, London, Eng. 1906.——"The Prevention of Tuberculosis by Building up the Defensive Powers of the Body." By Thos. B. Keyes, Chicago. 1904.——"The Cure of Consumption by Feeding the Patient with Subcutaneous Injections of Oil." By Thos. B. Keyes, Chicago. 1904.——"The Gross Appearances of the Tissues of the Iris in Epilepsy." By C. A. Oliver and J. C. Knipe, Philadelphia. 1905.——"A Brief Summation of the Interrelationship of Binocular Fields of Color Vision and Combined Areas of Astigmia." By C. A. Oliver, Philadelphia. 1906.——"A Plea for Governmental Supervision of Posts Necessitating Normal Perception of Color." By C. A. Oliver, Philadelphia. 1905.——"A Study of Simultaneous Contrast Color Images." By Charles A. Oliver, Philadelphia. 1905.——"Regulation of Color Signals in Marine and Naval Service." By C. A. Oliver, Philadelphia. 1904.——"Coetaneous Contrast Colors and Astigmia." By C. A. Oliver, Philadelphia. 1905.——"A Brief Note on the Relative Virulencies of Differently Tinted Colonies of Chromogenic Bacteria." By C. A. Oliver, Philadelphia. 1905.——"Description of a Single-Stitch Operation for Advancement of the Exterior Ocular Muscles." By C. A. Oliver, Philadelphia. 1905.——"The Female Prostate. An Anatomico-surgical Study." By C. A. Barnett, Fort Wayne, Ind. 1906.——"The Russell Treatment of Consumption Applied to Tuberculous Bones and Joints." By A. H. Cilley, New York. 1906.——"Iron Medication in the Treatment of the Anæmia and Debility of Children." By S. Herbert Perry, Birmingham, Eng. 1906.——"X-ray Treatment as a Preventive of Recurrence Following Extirpation of Malignant Growths." By W. D. Witherbee, Charlotte, N. C. 1906.

The following from the United States Department of Agriculture, Washington, D. C.: "The Cost of Producing Farm Products." By W. M. Hays and E. C. Parker. 1906.——"Foreign Trade Practises in the Manufacture and Exportation of Alcoholic Beverages and Canned Goods." By H. W. Wiley. 1906.——"Experiments in Growing Cuban Seed Tobacco in Alabama." By G. T. McNess and L. W. Ayer. 1906.——"The San José or Chinese Scale." By C. L. Marlatt. 1906.——"Management of Soils to Conserve Moisture, with Special Reference to Semiarid Conditions." By G. G. Failyer. 1906.——"A Successful Hog and Seed-corn Farm." By W. J. Spillman. 1906.——"Kiln-drying Hardwood Lumber." By Frederick Dunlap. 1906.——"Experiment Station Work, XXXVIII," Nov., 1906.

AMERICAN PHYSIO-THERAPEUTIC ASSOCIATION.

Physicians, who are interested in the study and legitimate practice of the physical (drugless) therapeutic methods, notably electrotherapy, phototherapy, mechanotherapy, hydrotherapy, suggestion, and dietetics, are invited to join the American Physio-therapeutic Association. Address the secretary, Dr. Otto Juettner, 8 West Ninth Street, Cincinnati, Ohio.

The officers for the ensuing year are: President: Dr. H. H. Roberts, Lexington, Ky. Secretary: Dr. Otto Juettner, Cincinnati, Ohio. Treasurer: Dr. Geo. H. Grant, Richmond, Ind. Executive Council: Drs. W. F. Klein, Lebanon, Pa.; Jas. Hanks, Brashear, Mo.; J. W. Unger, West Point, Miss.; Chas. S. Northen, Talladega, Ala.; R. W. Gibbes, Columbia, S. C.; S. J. Crumbine, Topeka, Kans.; A. L. Blesh, Guthrie, Okla.

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Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

RHEUMATISM AS A NEURITIS.

BY WOODS HUTCHINSON, A.M., M D.,

ARROWHEAD HOT SPRINGS, CAL.

Formerly Professor of Comparative Pathology in the University of Buffalo.

RHEUMATISM has ever been one of the opprobria of medicine. What is it? What to do for it? The answer is Babel.

In the long twilight days it was set down as due to cold and damp, merely because cold and damp generally aggravated the process *after* it had once been initiated. Then the good old Diathesis, "dartrous," "catarrhal," "arthritic," held the stage. Sole basis, that one attack seemed to predispose to another, the pathologic converse of the "one good turn" proverb. True, rheumatism "runs in families" just like colds in the head, or eating three meals a day, or wearing collars. It is so common that it can't help it, if the family be of more than Parisian size. Only a foundling or the only child of an only child is unable to unearth some history of rheumatism in his family. Like arteriosclerosis, it is one of the "normal reflexes" of senility. Its tendency to repeat is merely one of the great group of pathologic reactions, the antithesis of immunity, when, instead of "antibodies," "probodies" seem to be formed in the blood. Witness the curious toxic effects of the smallest quantity of a food by which one has once been thoroughly surfeited or even ptomaine-poisoned, like oysters, fish, cheese, or bananas, the chill habit after malaria, the diarrhœa habit after dysentery, the cold-catching habit, big-toe-gout, etc.

Then came the neurotrophic theory of J. K. Mitchell, expanded later by Jonathan Hutchison, comparing the joint changes with the artropathies of tabes and other cord-scleroses, fascinating by its very audacity, but more than half-convincing, too.

Finally appeared the specific-infection view, which seems to have won the assent of the majority of the leaders of the profession to-day.

Against this, however, as an adequate explanation, are still to be reckoned:

1. The failure to definitely isolate and agree upon the organism after twenty years of tireless and intelligent bacteriologic work. Only the discoverer can find his organism in a majority of the cases. Control researches generally find a majority of joint-fluids sterile.

2. The absence of any instance of the transference of the disease. Epidemics are reported, but no communication whatever seems traceable between the individual cases.

3. The extraordinarily fugacious character of the joint-swellings, the infrequency of suppuration, and astonishingly rapid and complete subsidence of the "inflammation," leaving not a trace behind in joint or ligament.

4. The wide variations in the length of the natural course of the disease, its tendency to predispose to another attack instead of to protect against it, and the countless variety of the forms and symptoms.

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Nevertheless it seems the most probable working-hypothesis yet, and I think most of us feel towards it much as the country justice of the peace did towards a certain case which had just been tried before him, when he announced that he should take it under advisement until Monday, but when he did decide it would be in favor of the plaintiff.

Such, at least, was my own frame of mind, when, about a year ago, I began to see at Arrowhead Springs, Cal., a considerable number of cases of chronic rheumatism in rapid succession, with unusually good facilities for careful study and prolonged observation of each case. The first impression was one of confusion worse confounded, so multiform and erratic were the lesions presenting. Was there such an entity as rheumatism, or was it merely the name of a diagnostic dump, upon which were shot all sorts of disturbances of the locomotor apparatus, having little more inherent relation to one another than have the different substances in a garbage can? The name alone seemed to unite them, and, like garbage, their chief point of interest was that they were to be got rid of, and salicylic acid was their most popular incinerator.

Rheumatism seemed to bulk as any painful interference with locomotion curable by the salicylates.

Then as the group observed passed fifty or sixty, a type picture began to emerge, a composite unity under the diversity, blurred at first, but steadily growing clearer until, before the second hundred was reached, it stood out distinct as a neurotoxis, deepening often into neuritis.

The confusion before had resulted from the attempt to make the arthritis

the central stem from which the various branches diverge, when it is only a secondary epiphenomenon, which may or may not be present.

The supporting facts were briefly:—

1. That in over a third of the cases not even apparent joint-involvements were present, or given in the history.

2. That in 60 per cent. of the cases where joint-lesions were apparently present or even complained of, the disturbance was clearly not in the tissues of the joint, but in the muscles controlling or the nerve supplying it.

3. That in nearly all cases which had lasted more than three months, either wasting of one or more muscles or groups of muscles, or thickening or tenderness of the nerve-trunks, was discoverable on careful examination.

4. That the joint-lesion or lesions were *never* the sole and seldom the chief manifestation of the disturbance. Pure monarticular rheumatism was never found. Patients complaining of thickening of one or two finger-joints would be found to have lost 50 per cent. of their hand-grip, or to have deltoid atrophy, or "stiffening" of the knees (quadriceps), hamstring impairment, or a lame back, or defective knee-jerks.

The commonest "monarticular" form was painful paresis of the deltoid, and supra- and infra-spinatus, and leves minor group, all of which are supplied from the same cord-level (fifth and sixth cervical). This is the well-known "chronic arthritis" (or "bursitis") of the shoulder, usually accompanied by atrophy of these muscles.

5. In the cases which presented or developed acute exacerbations under observation, including 15 cases of typical "acute articular" rheumatism, with fever, acid sweats, "white-flannel" tongue, etc., the pain, swelling, and tenderness upon pressure invariably began and remained greatest *upon one aspect of the joint,* and that aspect corresponding to a single nerve-supply. In many cases only this aspect would be swollen, or painful, during the entire attack; in others, half or two-thirds of the joint circumference would be involved, but seldom the complete circle. In some instances the swelling was two inches or more away from the joint proper, and its limited character so obvious that the patient himself would describe it as a "bump" on his knee or his ankle.

6. Out of 112 successive cases studied to date, with this point in view, 71, or 64 per cent., were found to have occurred during or while convalescing from an attack of some acute infection. These infections, in the order of their frequency, were influenza (28), tonsillitis, diphtheria, pneumonia, whooping cough, typhoid, tuberculosis, and infected wounds. Twelve others were traceable to non-microbic or auto-intoxications, viz., lead, alcohol, overwork,

and ptomaine-ingestion. Making 83, or 75 per cent., of toxic origin, with all the symptoms of a post-infective neuro-toxis or neuritis.

Of the 112, 14 were cases of arthritis deformans, or "rheumatoid arthritis," which is now generally admitted to be a degenerative process of the peripheral nerves, of unknown and possible specific infectious origin, and should rightly be called "neuritis deformans." Of these 14, 4 began with a chill and high fever, 4 others followed apparent attacks of the grip, and all but 3 gave histories of exacerbations following attacks of apparent influenza or tonsillitis.

These findings, of course, do not necessarily conflict with the specific-infection theory of the disease, as some, at least, of the attacks of apparent influenza or tonsillitis may have been the local disturbances attending the entry of the *diplococcus rheumaticus* into the system through the throat and nose.

Six cases of gonorrhœal arthritis also came under observation, but this, in my judgment, is a typical septic arthritis, due to the invasion of the joint-tissues by the gonococcus and in no way related to rheumatism. Its affiliations are with the septic arthridites, like the pyæmic, the tuberculous, the typhoid, the scarlatinal, the acute arthritis of children.

Its inclusion in the rheumatic group was little short of a calamity, and has given rise to false and misleading analogies.

7. The best results in the way of treatment are got by controlling the acute pain with the milder analgesics, especially such as obtund nerve-pain, like phenacetin, chloretone, ichthyol, and the salicylates, and then promoting the elimination of the toxins in every possible way, by hot baths and sweats, hot mineral waters, the alkalies, the iodides, urotropin, etc.

Any specific action on the part of the salicylates is a myth, as they have been clearly shown to neither shorten the course of the attack, nor diminish cardiac complications, while they increase the frequency of relapses. Their sole value lies in their analgesic and mild intestinal and urinary antiseptic effects; and these can often be obtained in one-third of the time with far less disturbance of the stomach and nerves, by phenacetin and chloretone (5 grains of each every hour until pain is relieved or 4 doses taken, then every 3 hours), followed by ichthyol. Alkaline evaporating lotions, containing 20 per cent. of alcohol and 10 per cent. of ichthyol, are also of great service, applied on snug lint bandages.

In fine, this brief series of case-studies so far inclines me strongly to regard rheumatism as a neurotoxis, occasionally deepening into neuritis, of multiple postinfective or other toxic origin, varying from the acute articular form at one

extreme to neuritis deformans at the other. Its occasional epidemicity and its seasonable proclivities are, of course, explicable by the frequency of acute infections, especially influenza, during the winter and early spring. Chorea is a cerebral localization of the neurotoxis.

I should be greatly interested in learning how the study of a series of cases from this point of view will impress other observers.

THE SANATORIUM TREATMENT OF TUBERCULOSIS IN THE UNITED STATES AND EUROPE.

By JOSEPH WALSH, M.D.,

PHILADELPHIA.

President of the Pennsylvania Society for the Prevention of Tuberculosis, and Assistant Director of the Henry Phipps Institute.

The next International Congress on Tuberculosis is to be held in Washington, in September or October, 1908. It is expected that many of the Europeans interested in tuberculosis will attend, and it appears not untimely to compare the European sanatorial methods of treatment with those in vogue in the United States. The papers and discussions of the last International Congress on Tuberculosis, held in Paris in October, 1905, at which there were over 3000 delegates from all parts of the world, revealed no new methods or specifics in the treatment of tuberculosis, and it was generally agreed that sufficient rest, sufficient fresh air, and sufficient good nourishment were the only elements in the treatment at present known to science.

The general differences between the United States and Europe might be summed up to be first, the Europeans have been engaged a longer time in the work and have a greater number of hospitals, sanatoria, dispensaries, and societies for the treatment and regulation; second, the enthusiasm of the Europeans has had time to wane somewhat in regard to sanatoria, but is very active in regard to new features, like dispensaries and antituberculosis societies.

Although the general ideas as to rest, fresh air, and good nourishment prevail everywhere, details in the carrying out of these essentials differ somewhat. In order to have some starting point from which to compare the different sanatoria, I will give the treatment in detail at the White Haven Sanatorium, with which I am connected, and endeavor to compare it with the treatment elsewhere.

Rest.—On admission to the White Haven Sanatorium the patient is sent to the infirmary for two weeks in order to determine exactly his condition by frequent estimation of the temperature, etc., and in order to avoid infection

of others in the sanatorium in case he has brought an acute infection with him. If at the end of two weeks the patient still manifests a temperature over 100° F., or a very rapid pulse, he is kept there until these symptoms subside. As soon as he leaves the infirmary and enters the general sanatorium, he is put on one hour's work a day. He does not leave the infirmary, therefore, until it definitely appears that he is capable of doing this hour's work without harm to himself. The work is usually increased five minutes a day, and rarely ten minutes a day, until he reaches eight hours' work. He is kept at eight hours' work for one month, and then sent home with the idea that with proper care he can do eight hours' work a day at home.

With signs of acute cold or any acute condition he is put on absolute rest, and if the period of rest is protracted his work is gradually increased again. Practically all the work about the sanatorium is done by the patients working in this fashion. It usually requires about six months to bring the patient to a point where he works eight hours a day for one month.

In other words, we believe that absolute rest is a prime necessity when the patient shows acute symptoms or is badly run down; but since these patients are poor and must work when they leave the sanatorium, we believe it advisable to show them how to do it properly without injury to themselves.

In the private sanatoria about White Haven where the visiting physicians to the White Haven Sanatorium send cases, the same ideas are carried out, though instead of work the patients are put on walking exercise.

I do not know of any other sanatorium in the world in which the patients are put on such systematic exercise, except Brehmer's, in Görbersdorf. Here they are put on graduated mountain-climbing from the day of admission. If the case is very acute, showing high temperature, or rapid pulse, or extreme debility, of course it is put to bed even in Brehmer's Sanatorium, but it is probable that they start exercise, and in the form of mountain-climbing, much earlier than in any other sanatorium in the world.

In the majority of other sanatoria in the world which I have personally visited comparatively little insistence is placed on exercise. In Rompler's Sanatorium at Görbersdorf, in Falkenstein, and in many others patients remain on rest during their entire stay, even though they remain a year.

It appears to me that practically the same theoretical ideas relative to rest and exercise prevail everywhere, but in the majority of cases it is only the rest that is insisted on.

In Frimley Sanatorium, which is practically the country branch of Brompton Hospital, London, which receives the same class of patients as the White Haven Sanatorium, they endeavor to have the patients do a certain

amount of light work, like gardening, etc., but I understood, without great success. They claim that the class of patients coming there, many of them clerks in London counting-houses, think it *infra dig.* to work in a sanatorium, and would rather leave than work. This seemed to be the view in the public sanatoria throughout Europe generally, like, for instance, in Bournemouth and Beelitz. I think the same is true also of the majority of the public sanatoria in the United States.

In the private sanatoria in Europe, like Falkenstein, Hohenhonnef, and Rompler's, patients are sometimes found playing light games like croquet, but scarcely anything more violent than this.

In other words, in sanatoria generally, rest is not only believed to be an essential, but exercise is, as a rule, so relegated to the background that it is scarcely in evidence.

Fresh Air.—In the White Haven Sanatoria all the windows in the rooms or wards are kept wide open at night; while on rest the patients sit outside ten hours a day, and while on work are outside at least all the hours that they are not working. This is recognized as the theoretical ideal everywhere, and I think it is faithfully carried out in the United States and England. It did not strike me that it was quite so thoroughly carried out on the continent. Though this ideal was put before the patients, it was not absolutely insisted on, and especially in the private sanatoria considerable leeway appeared to be allowed.

In Falkenstein, in Rompler's and in Brehmer's, though the patients were urged to remain outside in the day time, the most beautiful reception rooms, reading rooms, libraries, and closed winter gardens furnished practical inducements to remain in-doors. Moreover, in every room there were double windows and the patients apparently exercised their own control of them.

Good Nourishment.—The nourishment at the White Haven Sanatoria consists of one square meal of solid food in the middle of the day, and three quarts of milk and six raw eggs over the rest of the day. Shortly before the patient goes home some additions are made to this diet. I do not know of any place in the United States where exactly this same diet is followed, though I believe a similar diet is followed out at Nordrach, in Germany.

In Europe generally they insist on forced feeding, but allow a much wider latitude in the articles of food. In practically all the sanatoria in Europe which I visited they furnished three solid meals a day, and three light lunches. These light lunches usually consisted of milk and raw eggs. The articles of diet at the solid meals were those common to the country; for instance, in Germany I have seen not infrequently coffee and rolls for breakfast, ham and

sour kraut for dinner, and cold beef or sausage and always cheese for supper.

Alcohol.—In the White Haven Sanatorium alcohol is never used unless in an acute case of pneumonia. I think this is the usual routine throughout the sanatoria in the United States. The same is true of the public sanatoria throughout Europe. In the private sanatoria in Europe, however, when the patient can afford to pay for it he is allowed in England ale or porter for dinner, and in Germany wine or beer. In Germany they also allow wine or beer at the evening meal if it is desired.

Tuberculin.—Exactly as in this country, in some sanatoria in Europe tuberculin is used freely, in others not at all. It is probable that the best and most conservative recent article on the use of tuberculin for treatment has emanated from the United States and was read at the last meeting of the National Association for the Study and Prevention of Tuberculosis, by Drs. Trudeau and Brown, of Saranac Lake.

Inhalations.—Many of the sanatoria in Europe show handsome and splendidly equipped inhalation-rooms. On inquiry in the private sanatoria I found that creosote was the most common medicament inhaled. I asked if they thought that they derived any benefit from it, and they answered they did not, except whatever mental impression it exerted on the patient. In the public sanatoria, like Beelitz, these inhalation-rooms are not used at all. Inhalation-rooms are rare in the sanatoria in the United States, and inhalations, when used, are practically restricted to laryngeal cases.

Douches.—At the White Haven Sanatorium patients are advised to take a complete bath twice a week, and since the shower bath is the most sanitary in a large institution, it is in the form of a shower that the bath is taken. They are advised also to sponge their chest and back each morning with cool water. When Brehmer founded his sanatorium he advocated douches every day. This idea was consistent with his general ideas in regard to exercise. Though Brehmer is dead, his ideas in regard to exercise as well as the douche continue to be religiously carried out. The douche-room in Brehmer's is a common room in the basement, with an extremely strong douche falling from a distance of about twelve feet above the patient's head. The douche is manipulated from a room absolutely separate and unconnected with the douche-room, and with the patient's chart before him the physician regulates the strength and duration of the douche.

In many of the sanatoria, both private and public, on the continent, elaborate douche-rooms are found. The douche-rooms at Falkenstein, at Hohenhonnef, and at Rompler's fell into disuse years ago, yet the majority of recent public sanatoria in Germany have installed the most elaborate rooms I have

ever seen. The story of these douche-rooms is usually similar to that at Belzig.

Belzig is an elaborate half-charity sanatorium about fourteen miles from Berlin, where they charge about five dollars a week. It has three departments, one for males, one for females, and one for children. The two former were opened about six years ago; the last about a year ago. Each one of the three departments contains its own elaborate marble-tiled douche-room, magnificently equipped with every kind of douche known to modern medicine. Everything about the room is beautifully nickel-plated, and one could only imagine it a room in a very luxurious and well-patronized Turkish bath. I asked the resident physician how much use was made of these rooms, and he said that though he had been there three years he had never seen them used once. In other words, despite the fact that the first two rooms had never been used, they had recently built the same sort of a douche-room in the new children's department.

Climate and Altitude.—In Europe there is practically no insistence on altitude or climate. The recent sanatoria over the continent are at various degrees of elevation and the handsomest and most elaborate are not elevated at all, at least not more than will afford them a free sweep of the country, more on account of the view than for any other reason.

Sea-coast, too appears to make no difference in their minds. The older English sanatoria, like Ventnor and Bournemouth, are on the sea-coast, the more recent ones in the country near the large cities.

In France, where the adult sanatoria are all recent, the great majority are on the sea-coast. In Germany, they have taken no pains but to put them near the large cities, the handsomest ones that I saw, namely, Buch, Belzig, and Beelitz, being built on the level, without view of any kind (except that of their own landscape gardening), just outside of Berlin.

Treatment of Cough.—In the White Haven Sanatorium our experience shows that the proper amount of fresh air, rest, and light nourishment stops the cough, at least to the extent that it is no longer annoying to the patient or to others. We believe that although opium may stop the cough for a night, its constitutional effect, especially the effect on digestion, is very bad, and the state of the patient is usually worse after the use of opium than before. Our general rule is, therefore, not to give opium in any form nor under any circumstances. The only exception which we are willing to grant is in a condition of considerable nervous excitement following a severe hæmorrhage, when one single hypodermic injection of morphine is given in order to relieve the excitement. I myself am so imbued with this idea that I can scarcely

believe an institution is doing good work when I find the pharmacy overstocked with preparations of opium in all its forms.

Yet in Europe heroin and codeine appear to be used rather liberally, especially in private sanatoria. Directors in sanatoria and resident physicians to whom I talked not infrequently claimed that aggravated cough could be relieved by no other means. I believe this is proven false, however, by the comparatively little use of opium in all our American sanatoria and its practical disuse in the White Haven Sanatorium.

Pleurisy.—The ordinary treatment for pleurisy all over the world is strapping in severe cases or cases with effusion; painting with iodine in chronic cases, or, if this does not relieve, a blister. In Belzig Sanatorium they were using for acute pleurisy and acute bronchitis the wet chest pack. This consisted in a wet bandage (wet with water) wrapped around the entire chest from the shoulders to the margin of the ribs, covered with another bandage, and this in turn by wax-paper or oil-silk, and changed every six hours and in special cases every three hours.

Sanatoria.—In regard to the sanatoria themselves, the principal difference between the United States and Europe is that the Europeans have been a longer time engaged in the work and have a greater number of them. Moreover, the European sanatoria are much more elaborate and better fitted out. The private sanatoria are large, massive, and handsome, but the public sanatoria are practically indescribable in their magnificence. Although they have a larger number of sanatoria than we have in the United States, and are able to treat more patients in the course of the year, yet I believe we accomplish better individual results. On the continent there is some excuse for the magnificence of the sanatoria, as they are superbly maintained, being supported usually by popular insurance companies. In England, however, they lack maintenance to a greater degree than we do in the United States, and as a consequence the amount of money put into the building seems excessive. In this country the general idea of building and maintenance follows those in vogue at Saranac Lake and White Haven. Saranac Lake Sanatorium was begun with one patient in a shack, White Haven Sanatorium with three patients in a barn, the buildings progressing as the number of patients increased.

As examples of European sanatoria we may mention the King's Sanatorium at Midhurst, in England, and Beelitz Sanatorium, just outside of Berlin.

The King's Sanatorium has now been building for four years and is not yet completed. It will cost when finished $1,000,000. It was built after the

elaborate plans of Arthur Latham, of England. It is built in a sort of Y-shape, the administration part being the lower leg of the Y. Despite the amount of money that is being put in the King's, Northwood, Frimley and Pinewood, which are not far away from it and are elaborate modern sanatoria, have only half their quota of patients. Northwood has accommodation for 120 and has about 68, with Frimley and Pinewood in the same plight. The reason for this is not that they have not sufficient patients to fill these sanatoria, but they have not sufficient maintenance to run them.

The sanatorium at Beelitz is so complete that it is doubtful if any sanatorium will ever be built to surpass it. It cost over $3,000,000. It has 600 beds; 300 for tuberculosis and 300 for general constitutional diseases like chronic rheumatism, nervous diseases, etc. The two departments are quite widely separated from each other, and the males and females are also separated in each department. The details of the equipment at Beelitz that are out of the common would necessitate an article in themselves. Not a few of these elaborate details are superfluous, yet there is an excuse for Beelitz which does not exist for the elaborate sanatoria elsewhere, especially in England. In the first place, all the public sanatoria in Germany are magnificently supported and there is no feeling that more money should be put into the maintenance; second, Beelitz Sanatorium itself was built by the People's Insurance Company, which found itself in a position where a certain amount of surplus had to be gotten rid of or it would probably go elsewhere.

THE VALUE OF THE MEDICAL MISSIONARY.

By W. W. KEEN, M.D., LL.D.,
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Modern missions have only existed for a little over a century. The first American medical missionary was Dr. John Scudder, who left the United States for India in 1819 and died there in 1855.

Naturally the object of the first missionaries was only the spiritual conversion of the heathen. Very soon, however, their deplorably filthy condition, the ravages of disease, and the cruelties of superstition compelled the missionaries to give instruction in public and private hygiene, and to render as best they could medical and surgical services to the neglected and often tortured victims of disease and accident. The value of their untrained services showed how much more valuable would be the services of missionaries with a medical training. Hence the appointment of the medical missionaries, and later of

trained nurses. With time and knowledge of the splendid services of these devoted men and women, medical missions have gained a stronger and stronger hold on the mind of the community. Even those who neither approve of evangelistic missions nor contribute to their support gladly give to medical missions. Their growth in numbers is astonishing. In 1899, Dennis[1] states that there were 338 American, 288 British and 27 Canadian medical missionaries in the various fields. In addition to these there were a few from Continental Europe and Australasia. The trained nurses—whose numbers I do not know, but they must be considerable—make a still further addition.

These medical missionaries and nurses served in 1902 in 379 hospitals and 783 dispensaries, and ministered to the ills of 6,500,000 patients annually. Their ranks were recruited not only from Europe and America, but there were, in 1902, 67 medical and nurse-training schools in missionary lands, with 631 native pupils. To this splendid roll are to be added the 240 native women students of the Lady Dufferin Association and Dr. Anna M. Fullerton's North India School of Medicine for Christian Women at Ludhiana, India.

Besides these strictly medical institutions there were of allied philanthropic institutions 533 orphanages, foundling asylums, homes for infants, leper hospitals, schools for the blind and the deaf and dumb, opium refuges, homes for widows and orphans, and asylums for the insane. All of this is in addition to the 94 missionary universities and colleges with 36,000 students, 179 industrial schools with over 9000 students, 879 high schools with 85,000 students, and nearly 19,000 day schools with almost 1,000,000 pupils. And yet there are those who decry the missionary enterprise! Not so did Hon. William B. Reed, of Philadelphia, one time Minister to China, who said: "I went to the East with no enthusiasm as to missionary enterprise. I came back with the fixed conviction that missionaries are the great agents of civilization."

The value of the medical services of the missionaries both to East and West is almost impossible to state. They have alleviated the dreadful sufferings of the natives by the introduction of anæsthetics and of vaccination;[2] of a rational treatment of cholera; of preventive inoculation against plague, and the prevention of the spread of plague by rats; by the use of modern Occidental methods and drugs instead of the useless and nauseating mixtures of the native Oriental practitioners; by the introduction of modern surgical

[1] "Christian Missions and Social Progress," ii, 193.

[2] One of my old students, Dr. Braddock, the Chief Physician to the King of Siam, has vaccinated 400,000 people. It is not without interest to note the pathetic devotion of one Chinese who wheeled his blind old mother 1000 miles—further than from Chicago to Philadelphia—in a wheelbarrow to consult another of my own students.

aseptic methods; by the substitution of modern obstetrical asepsis for the cruelties and often fatal barbarities of the native practitioners; and many other hygienic and beneficent services to suffering communities. The terrible atrocities of child marriage were revealed in a paper only privately circulated a few years ago. The details as to the mutilation of these young girl victims were so revolting that the women medical missionaries who made the investigations and signed the paper did not dare to print them. The story of the wonderfully useful, heroic, self-sacrificing services of Dr. Grenfell, the English medical missionary to the Labrador fishermen, reads like a romance of some mediæval knight errant. King Edward has most gracefully recognized it by a decoration most worthily won.

The difference between the homes of the Christian converts and the unconverted natives as I saw them in India and elsewhere was evident at a glance. "The former was clean and neat, free from accumulation of filth, and showed every evidence of thrift and orderly comfort, while the latter was its unsanitary counterpart. That to-day the greatest physical need of India and Burma is decent sanitation was most evident when we smelled the decayed fish diet of the native Burmese, and in India saw hundreds standing in the river waist-deep, drinking the foul water of the Ganges at Benares, while other hundreds at their elbows were washing themselves and their clothing in the river, with decaying bodies of animals floating on the tide, and a large sewer delivering its filth into the same stream less than three hundred feet away."

Moreover the Western world owes much to the missionaries. We owe quinine to the early Jesuit missionaries, a fact perpetuated in the old name "Jesuit bark" given to the powdered bark of the cinchona tree. Calabar bean, the kola nut and strophanthus we owe to the veteran African missionary, Dr. Nassau. Anyone who reads carefully our medical journals knows the frequent and valuable papers by missionaries on cataract, lithotomy, elephantiasis, leprosy, and many other tropical diseases.

That these services have received full recognition from scientists, travelers, statesmen, and many others well-known to the world, I have shown at some length in an address on "The Service of Missions to Science and Society." Among these authorities certainly not prejudiced in favor of missions, I need only name Charles Darwin, Alfred Russell Wallace, Benjamin Stillman, Louis Agassiz, Lord Dufferin, Gen. Lew Wallace, Charles Denby, John W. Foster, James Bryce, Sir Henry M. Stanley, Max Müller, and Lord Palmerston.

SOME RESULTS FROM MEDICAL MISSIONS.

By VALERIA F. PENROSE.

Author of "Opportunities in the Path of the Great Physician;" Secretary W. F. M. S. (Phila.) Study of Mission Schools, etc.

Dr. Peter Parker was the first medical missionary to China, and is well known in both eastern and western hemispheres and in three continents. In 1835 he began his work under the American Board in Canton, treated at least 53,000 patients himself, and through the Medical Missionary Society, of China, started under his influence in 1838, at least a million more patients enjoyed physical blessings. Visiting Edinburgh, the Edinburgh Medical Missionary Society was brought into existence in 1841, which has been of incalculable benefit in Great Britain, India, China, Japan, Turkey, Persia, Africa, till the ever-widening circle has no measure with which to estimate its benefits.

Dr. J. G. Kerr's record for stone operations at Canton was 1300, only exceeded by Sir William Thompson. So great was his fame that a distinguished foreign minister to the Court of Peking sent for him and was cured after a difficult operation. He published about thirty-two books on medicine and surgery. His last work was to privately collect funds and institute the only Refuge for the Insane in all China (there is only one other in all Asia, that at Brumanna, Syria), and he there cured many insane patients. There is very much insanity in China. There was the distinguished Philadelphian, graduate of the University of Pennsylvania, Divie Bethune McCartee. In China and Japan he did a wonderful work, winning hundreds by his services.

In China and all un-Christian lands there is an enormous amount of useless and relievable suffering. Wu Ting Fang says: "That which, undoubtedly, above all else, has made the way for Christian missions are the medical missionaries and the hospitals which they have established. The gospel of healing is the one that makes its way into the hearts of the people."

These lands have no rational system of medicine. Surgery is unknown. The skill of these medical missionaries spreads far and wide. There were only 770 in 1902, each having an allotment of 2,000,000 patients apiece! For the same number in this country there are 4000 physicians. Their fame spreads with the news of marvelous cures, the sight of the patient healed and well and walking where once hopeless suffering was daily seen. They come hundreds and thousands of miles. They come in great crowds, and when once the doctor has established himself, they show their confidence in all ways. A benefit to one man means thirty or forty patients from his neighborhood. Li

Hung Chang's wife was cured by an operation, a most remarkable concession of rigid etiquette for such a high rank in those days, and he built a hospital in acknowledgement at Tien Tsin.

Dr. Mary Pierson Eddy had 600 patients in one month's itinerary in Syria. They came from nineteen villages. A robber chief, who held the whole countryside in his power, startled her clinic one day with his followers. When Isabella Bird Bishop was traveling in Persia, everywhere she was asked about Dr. J. B. Cochran; in the wilds, almost unvisited, of Kurdistan, his name and fame were known. Robert E. Speer writes: "Our journey from Aras River to Urumia was one long testimonial to Dr. Cochran's power. He was our passport and defence." Robber chiefs, Moslem women, the governor of Khoi met them. "Ten miles from Urumia people began to meet us, the numbers increasing until a messenger from one of the governors came, leading a gaily caparisoned horse, to be taken before him in honor." Bishops of the old Nestorian church for counsel, prominent Mohammedan ecclesiastics for healing, governors, noblemen, poor people, all thronged to him. Do you appreciate what it means to have *Mohammedan* ecclesiastics forego their religious thralldom to approach a Christian even to be cured? Only marvelous skill, repeated cures, could break down such walls, centuries old and strengthened with age. In 1901 he had 10,314 patients, and "not one man in a hundred without distinction of race or religion, within many miles of the hospital, who would not in case of need gladly go there rather than be treated in his own home. No other agency can possibly do more along spiritual and evangelistic lines."

Medicine and religion are so divorced here that one must either be a deep student, or else have travelled most extensively and with understanding and insight, to properly appreciate what such influence means. The average globe-trotter misses all this knowledge. He takes the prejudiced view of a few who have not investigated. But when a Mohammedan sheikh will enter the accursed doors, will listen to teachings of an alien's hated religion, and will spread the fame of his healer abroad, surely power of an unusual quality is displayed.

Rarely are the hospitals adequately equipped; trained nurses are yet to be considered indispensable, sanitary conditions are poor, funds are inadequate, terribly so, yet modern miracles are wrought. Men of power go out to the foreign field, yet the opportunities are so immense that moderate ability is stimulated and the results tabulated would surprise their home instructors.

Vaccination introduced where smallpox ravaged, has had greatest success.

Surgery has seemed a veritable miracle. The African woman who was carried many days' journey to reach the medical missionary in awful plight, returning healed, walking, was an object lesson never forgotten.

Special Article

PHYSIOLOGICAL ACTION AND USES OF ADRENAL EXTRACTIVES*
(Adrenal Extract, Adrenalin, Epinephrin, etc.)

By C. E. de M. SAJOUS, M.D.
PHILADELPHIA.

(Concluded from January Issue.)

Perhaps the most interesting relationship of the adrenal secretion with the genesis of disease, is the experimental production of glycosuria by Blum,[30] Croftan,[31] Herter,[32] Herter and Richards,[33] and others, by injections of adrenal extract during a prolonged period.

In the first volume of "Internal Secretions"[34] I ascribed glycosuria to overactivity of the adrenals, the excessive oxidation in all tissues causing an increase in the production of the agent which converts glycogen into sugar. Increased metabolic activity in the pancreas readily accounts for such a process, since an overproduction of amylopsin, the ferment which acts in this manner on glycogen, must normally follow, with the formation of an excess of sugar as end-result. Herter and Wakeman[35] showed, however, that glycosuria could likewise be produced by painting the pancreas with 1 cubic centimeter of a 1 in 1000 solution of adrenalin—a result also obtained by compressing the adrenals as observed by Herter and Richards. How is this form of glycosuria produced? This introduces an important feature of my views as to the physiological action of adrenal extractives, in the sense that it gives us an insight into the manner in which adrenalin and other adrenal extractives produce their effects when applied locally, namely: that the *active principle* of the adrenal secretion is the *general catalyzer of our tissue elements*, fulfilling a rôle which Traube many years ago deemed necessary to account satisfactorily for cellular oxidation.

I cannot do more than allude to this process, referring you to the second volume of "Internal Secretions" for details; but the influence of a catalyser in the tissue-cells is suggested in Mathews's[36] statement that "atmospheric oxygen has little oxidizing power; whereas protoplasm brings about oxidations of the most radical nature, and is comparable in its oxidizing powers to the

most intense chemical oxidizing agents." Interpreted from my standpoint, protoplasm is capable of acting in this manner only because it contains the adrenal active principle. Embodied as it is in the oxidizing substance distributed to all cells, this principle, acting as catalyser, is able not only to transfer the abundance of oxygen with which it is linked, to the tissue elements, but also to crowd this gas on, as it were, without being itself destroyed. In other words, the adrenal active principle having loaded itself with oxygen in the lungs, becomes, in the tissues, owing to its catalytic property, an intense oxidizing agent.

When Herter and Wakeman painted a solution of adrenalin over the pancreas, therefore, they incited very active metabolism in all the cellular elements reached by the drug, because it behaved therein precisely as if it had reached them by way of the circulation. As a result of this overactivity, an unusual proportion of amylopsin—among other pancreatic ferments—was secreted by the pancreas, and glycosuria followed precisely as if adrenalin had been injected into the blood-stream, or as if the adrenals had been compressed.

This does not mean that this is the only way adrenal secretion may produce glycosuria, nor that glycosuria invariably requires a pancreatic ferment to be produced, nor even that glycosuria is always caused by adrenal extract—since an excessive dose can inhibit pancreatic functions by causing excessive constriction of its arteries. It affords a good example, however, of the general line of experimental facts which led me to conclude that *a local application of adrenalin produces blanching and contraction of a given tissue by inciting excessive metabolism in that tissue, including its blood-vessels.* The latter being practically occluded, owing to excessive constriction, they are the main source of the blanching, since blood ceases to be admitted to the tissues.

This explains, it seems to me, how ophthalmologists, laryngologists, gynæcologists, etc., secure a bloodless field for local operations, and why adrenal extractives prevent or arrest hæmorrhage during or after operative procedures even in such organs as the liver from vessels small enough to be occluded by constriction of their walls. Müller[37] found that the renal and hepatic tissues to which the solution had been applied suffered in no way, and that the reparative process was not retarded—a fact which suggests that it had merely enhanced the activity of a normal function. Braun[38] states that a solution of 1 in 1,000,000 injected into the tissues is as active as freezing for the depletion of tissues of their blood. Moore and Purinton[39] having found 2½ millionths of epinephrin to the kilo of dog, capable of pro-

ducing appreciable effects, it becomes evident that we must be dealing with an agent such as a catalyzer is known to be: one capable of inciting, in proportion to its own volume, enormous activity through the intermediary of some other agent—oxygen in this case.

This accounts also for the gaping vessels, the secondary hæmorrhages, the œdematous infiltrations, etc., we sometimes witness after operative procedures in which adrenal extractives are used. The vascular elements, being the seat of excessive metabolic activity, are left exhausted, and are thus unable for a time to resume their tonicity. Hence, the advisablity of using as weak a solution as will satisfy the needs of the operation to be performed, and when used for the depletion of engorged tissues, such as hæmorrhoids, gingivitis, turbinate infiltration in hay-fever, etc.

Another action of adrenal extractives which my views elucidate, is the production of arteriosclerosis by their prolonged use, as recently shown by Josué,[40] Erb,[41] von Rzentkowski,[42] and others. Oliver and Schäfer[43] showed twelve years ago that adrenal extract caused contraction of the blood-vessels by acting directly on their walls. In the light of the foregoing data, this is due to the fact that it enhances excessively intracellular metabolism in the vascular elements, the vessels being thus caused to contract violently. The smaller the caliber of a vessel therefore, the greater the chance of its lumen being obliterated. Now, the vasa vasorum have long been known to take a prominent part in the pathogenesis of arteriosclerosis. Cowan[44] states, in fact, that the "vasal changes may, in some cases, be the only visible lesion," and refers to cases in which he says "the interference with the vascular supply from the vasal vessels produced medial and intimal necrosis." Councilman's[45] study of 41 autopsies showed that in the nodular form the primary alteration consisted "in a degeneration or a local infiltration in the media and adventitia, chiefly about the vasa vasorum." The manner in which injections of adrenal extract can give rise to the arterial lesions is now plain: By closing the vasa vasorum, they arrest the nutrition of the vascular walls, and the typical lesions of arteriosclerosis follow.

The arterial degeneration thus produced differs histologically from true arteriosclerosis in that it is brought on acutely, as it were, as compared with human arteriosclerosis, which is very gradually developed. Again, the artificial lesion being due to arrested nutrition of the muscle cells of the media, the degeneration is practically limited to this layer.

Shock is another condition in which adrenal extractives show prominently their influence on metabolism. The function I ascribe to the adrenal secretion, namely, to take up the oxygen of the air and penetrate the tissues, where

its active principle augments greatly the activity of this gas, involves the conclusion that it is a prominent factor in the sustenance of the body heat. In fact, Reichert[46] observed that adrenal extract caused an elevation of 1° F. in rabbits, accompanied by increased metabolic activity. Lépine[47] states that the increase of blood-pressure caused by alrenal extract is always followed by a rise of temperature. Morel[48] noted that it caused in guinea-pigs a rise of from 0.9° to 1.8° F. Now, Kinnaman,[49] in a comprehensive study of the temperature relationship to shock, concluded that as shock increased in severity, the most uniform and progressive factor was the fall in temperature. He states that "in one series [of cases] the fall in temperature was the sole cause of shock." The brilliant results of Crile[50] with adrenalin in salt-solution given very slowly and gradually for a considerable time thus find a normal explanation in my interpretation of the rôle of the adrenal secretion. He supplied the organism precisely with the substance which sustains the vital process in the tissue cells. Indeed, he resuscitated animals in this manner—with simultaneous artificial respiration—fifteen minutes after all signs of life had ceased, and was able to keep a decapitated dog alive over ten hours by this same procedure. That it was because the adrenal secretion is able to sustain tissue metabolism, *i.e.*, the vital process itself, that such results were obtained seems self-evident.

Applying this general principle to the internal use of adrenal extractives, a salient feature asserts itself, namely, that whenever they have been found useful in a general disorder, it has invariably been in some condition attended with or due to lowered metabolic activity or adynamia.

Solomon Solis-Cohen[51] introduced the use of suprarenin in asthma, but for cases attended with lowered vasomotor tone. Others have confirmed his observations. The relationship of asthma with the gouty diathesis is well known; we know also that this condition is imperfect nuclein catabolism. Migraine is also related to gout; Thoma and others have reported cases in which relief followed the use of some adrenal extractive. Hay-fever, another disorder ascribed to a gouty diathesis, has been found by Cohen to be influenced favorably by suprarenalin, allowed to dissolve on the tongue. The effects were sufficiently marked in some cases to "induce and preserve comparative comfort." Adrenal extract has been found of value in neurasthenia by many observers, including Huchard. In cardiac disorders it has been highly recommended by several clinicians, including Mankowsky,[52] Floersheim,[53] and Deeks[54]. Mankowsky specifies that the most useful application of adrenal extract is in cardiac weakness and threatening collapse. Floersheim found it effective where our usual remedies had failed. Deeks obtained

not only marked improvement in cardiac weakness, but disappearance of attending œdema. Boy-Teissier[55] obtained excellent results in cases of weak heart with general cyanosis and great cardiac dilatation.

Finally, in Addison's disease, the vitality is so reduced that, as stated by Rolleston,[56] the cases sometimes emit a cadaveric odor. Here, the adrenals being the seat of destructive lesions, we should have in adrenal extract an infallible specific. Some clinicians have obtained marked benefit from its use; others have observed no effect. Some, including Senator,[57] have noted no modification of the nitrogen output; some found that it was increased; others that it was decreased. In our literature, these results are recorded as discordant; but this is not warranted in the light of my views. They merely indicate that metabolism is more imperfect in some cases than in others, owing to greater destruction of the adrenals or of their nerves, and that where no perceptible effect is obtained from adrenal extractives, it is because the supply is not adequate, both as to quantity and continuity, to restore the vital equilibrium—to compensate, in other words, for the loss of those organs which, I believe, sustain the vital process by supplying the tissues with oxygen.

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Editorial

CLINICAL RECORDS OF FAMILIES.

To successfully solve clinical problems the physician must possess ample facts of two kinds, present and past. He must ascertain the status of his patient, both to-day and of long remote. Unless a fair knowledge be acquired of antecedent conditions, the elucidation of the immediate problem can be only imperfect. To minimize the gravity of the obviously significant earlier history is to fall into error and invite blame. The public is quick to criticize our sins, not only of commission but especially of omission. They demand, naturally, that we shall be able to tell them correctly what is amiss now, what may yet be, and above all what outcome shall be expected.

We are constantly forced to prophecy, and a future is dark without adequate light from anterior facts, however much skill we may possess in interpreting the presenting phenomena of nature and her complex derangements. Some may have the gift of divination, but so rare is this that the only safe course is to be armed by all attainable, all relevant, incidents bearing even slightly upon the problem in hand. Then, and then only, can we draw rational inferences or make exact deductions. It is ordinarily difficult enough to comprehend existing disorders, but it is far more so to acquire reliable information on antecedent happenings.

In the conduct of any large business one of the primary requisites is a knowledge of all obtainable collateral facts. No business man will blame an employee for errors committed if the cause is clearly absence of information essential to the understanding of the problem. In every well-regulated office, legal, financial, architectural, engineering, manufacturing, commercial, and the like, it is customary to devote a large part of the office force to the securing, sifting, systematizing of facts, direct and indirect, and placing them ready to hand. Success is recognized to follow in proportion as this data is adequate, and wisdom is exhibited in its prompt utilization. The laity criticize us sharply and justly for our too frequent lack of consistency in views on related subjects, diversities in belief as to causes, phenomena, progress of human derangements; above all, for seeming contrariness in selection of remedies, and guesswork as to finalities.

Yet it is by no means all our fault that medicine can still be termed inexact. In spite of all blameworthiness, our daily practice achieves excellent results by the constancy of our observations, our rational deductions, and the exercise of much sound common sense. Despite centuries of effort, we still

lack many fundamental facts. The public should be made to know that research workers in medicine are estimated by experts in other scientific lines to have contributed more to the sum total of human knowledge than the aggregate of all the other exact sciences. Indeed, we now await rather for medical philosophers who shall sift, correlate, and adjust the enormous collected data than for new facts, important as these always are.

The chief obstacle in solving clinical problems lies in the absence of adequate case histories.

To remedy this, I would propose the very *general employment of family case-history books.* These should be simple yet complete in their arrangement, with clear, exact directions for use by parents, physicians, and others. Physicians could buy them cheaply in quantity and supply them to all the families they attend, gratis or for a small sum. If this were done, or wherever done, there would be at least a more or less satisfactory record kept of happenings, peculiarities, data on growth, development (mental and physical), accounts of ailments, illnesses, in sequence. When the medical attendant is confronted by the problem of an ailment he would be able, by consulting this record, to obtain invaluable light on many otherwise obscure points. To depend upon the memory of parents, or the records of other physicians, is far from satisfactory. There can be no two opinions on the extreme value of such a book. It is obvious to the physician. He should urge the use of such a book upon all people, whether they be his regular patients or not. It would not be long before all intelligent people would adopt the custom. The records would thus be entirely private, even more so than of those case-histories kept in physicians' offices. And how irregular, partial, subject to endless exigencies these are, anyhow. When a family transfers its confidence from one physician to another, it is often most difficult to secure cordial co-operation and comparison of notes. Whenever a specialist is needed he may desire information of a sort not to be had at all. Such a family record could be so devised, by the help of specialists in different lines, as to supply much that would be thus required.

Objection might be urged that these family records would be neglected. Doubtless, and by many, until their vast utility, their economic bearings, should be gradually learned and appreciated. Meanwhile, there are many people who would at once recognize the vital need for the preservation of full, accurate histories of each child from birth, or even before.

The form of such a case-record might be somewhat as follows:—

A blank book with (1) index; (2) weight-charts for infants; (3) temperature-charts including pulse, respiration, urinary output, fæces, etc., to be kept by trained nurses; (4) outlines for urinalyses; (5) anatomical diagrams.

On the blank pages for individual histories it would be well to print certain headings, with lines underneath, such as:—

1. Circumstances of birth: slow, difficult.
2. Condition immediately after birth.
3. Manner of feeding: if breast feeding, how long; if artificial feeding, what foods used, how long.
4. Any peculiarities noticed: *e.g.*, sleep; tendency to sweat about the head; how early the teeth came; if convulsions or spasmodic states; how much crying; nervousness, etc.
5. Earliest ailments: diseases, what there were; whether indefinite ailments or infectious.
6. Peculiarities of digestion, colic, bowels.

(And many other essential points.)

In the taking of the histories of children the burden will fall naturally upon the mother or other near relatives. The trouble of doing this is slight. It can be best done coincident with the occurrence of notable circumstances, but is most feasible while the facts are fresh in the memory. Few mothers will fail in so plain a duty; many will be glad to preserve a record of important happenings. Some will welcome a suitable opportunity to note progress, development in body, but especially in growth of mentality. Invaluable records have been made by parents which furnish data for child-study, comparative psychology, developmental stages, and many similar researches.

The family physician is the one whose duty it is, and privilege it should be, to oversee the members of a family whenever, in his judgment, there is necessity, not only to treat, but to employ measures to prevent disease, to watch growth, to confer on subjects consonant with his official connection. He will be glad to make memoranda himself in the record book. Whenever he visits the family and makes observations, the book should be submitted to him to make notes.

During severe or protracted illness, when a trained nurse is employed, the records should be kept in this book. Ordinarily the nurse keeps her own records, or sometimes gives them to the physician. In the interest of exactitude, there should be certain pages of blank anatomical diagrams, such as are used in hospitals and by careful clinicians, on which can be marked the site of lesions of chest, of heart, or other parts.

The author would be grateful for expressions of opinion on this proposition, suggestions as to details, etc. If they are favorable, such a *family clinical record book* will be placed upon the market.

J. Madison Taylor.

A MEDICAL SCHOOL FOR NATIVE CHINESE AT CANTON.

We present in this issue two communications, one by Professor Keen, and one by a friend whose observations are likewise worthy of the highest consideration. The humanitarian work of our expatriated colleagues speaks for itself.

Whether we are interested in the evangelizing purposes of the medical missionaries or no, their scientific work appeals to physicians on two grounds: (1) We are all, by education and habit of mind, glad to help our suffering fellow-man. Good medical men, of dominant personalities, are needed to carry on this splendid career, filled with rewards in the way of consciousness of concrete benefits rendered others, and the approbation of their consciences. (2) We physicians are, at heart, essentially scientists; we welcome the vast possibilities opened up by this new and limitless field of activity. Hitherto criticism on the work has been directed mainly to the absence of adequate scientific findings recorded. This ought not to continue. To realize reasonable expectations the individual medical missionaries must be supported at all essential points. They should be able to work in groups, reinforcing each other, specializing, elaborating methods, providing them with means and leisure for observation, and for making records. Their equipment must be adequate. The most urgent work, as well as the most graphic, is in surgery. To accomplish this there must be suitable hospitals. To amplify, to cover the ground with even moderate thoroughness, the medical experts must train native helpers. This is being done in China by the establishment of medical schools, wherein the natives are taught to become surgeons, clinicians, as well as propagandists of right living, of hygiene, of all the powerful resources of prevention as well as cure.

Various universities are giving their attention to this work; Harvard to India; Yale has founded a Christian college in Chang Sha, Central Hunan, China; Princeton supports two men in Peking; the University of Pennsylvania is arranging to found a medical college in Canton, China.

The Christian Association of the University of Pennsylvania sent out, seven years ago, to Canton, Dr. Andrew H. Woods, '99 Med., who has been all this time a member of the faculty of the Canton Christian College. Last year, they sent out that splendid "all-round man," known for his phenomenal football playing, Dr. Josiah C. McCracken, who spent some time there and returned to mature further plans; and now is working with Dr. Woods in Canton, to establish a medical school. The native Chinaman is the key to the

situation. He has physical, mental, and moral potentialities which adapt him to a practical efficiency. The plan is to establish, first a dispensary, later a first-class hospital of three hundred beds, and, finally, the medical school.

The completed plant will afford untellable relief to the sick and will sow the seeds of knowledge of self-preservation, and also promote original research in tropical diseases. Japan has accomplished amazing progress from just such beginnings.

We beg the coöperation and support of all physicians in these plans. These two noble youths deserve frank encouragement from every one who approves of their purposes. A letter to this effect to them would hearten them up notably. Their address is Canton, China; care of the Christian College. Give them the hand of fellowship across the sea. They need money to carry their aims to efficient ends. This could be sent to Edward C. Wood, Treasurer, Christian Association, University of Pennsylvania.

J. MADISON TAYLOR.

Cyclopædia of Current Literature

AMBLYOPIA DUE TO TOBACCO.

Every case of tobacco amblyopia has certain features which at once raise suspicion as to the source of the trouble. Among these are pallidness of the face, tremulousness of the hands, and marked furring of the tongue. There is a history of blurred and failing vision for some weeks or months, loss of appetite, sleeplessness. Tobacco amblyopia is very rare in youth, and most frequent during middle age. The explanation of the toxic symptoms in these cases probably is that a lowered vitality of the tissues, with the advance of age, is followed by a defective elimination of the poison. The chief factor is the quality of the tobacco of which use is made, which determines the onset of the toxic symptoms. The working classes, as a rule, use shag tobacco, which, being strong, can be indulged in to excess without causing any local disturbing effects. Milder forms of tobacco invariably cause local symptoms—soreness of the tongue and lips, pharyngeal catarrh, etc. The quantity smoked in the toxic cases is invariably from a quarter of an ounce to half an ounce daily.

The amblyopia is generally accompanied by tremors and cardiac disturbances. The alkaloid nicotine is the main, if not the only, cause of the toxæmia. Although chronic inflammatory changes may be present in the optic nerve, yet the ophthalmoscopic appearances are entirely negative. But the pathognomonic sign of the disease is invariably present—a papillomacular scotoma for green and red. Loss of color-perception occurs in other pathological conditions of the optic nerve—

e.g., in papillitis; but in all such cases there is manifest evidence by the ophthalmoscope of the disease by which it is caused.

Treatment resolves itself into two main features: (1) the absolute prohibition of every form of tobacco-habit; and (2) means to stimulate the gastric digestion and cure the chronic gastritis. The latter is readily accomplished by the administration of a tonic, preferably of strychnine and iron.

The prognosis, with rare exceptions, is good. When the symptoms have persisted for not more than three months, perfect recovery of vision usually ensues. After that period full vision is not always recovered, though great improvement generally results. The prohibition of all forms of tobacco should be maintained for at least twelve months, after which the patient, if so inclined, may begin to smoke moderately and tentatively a mild form of tobacco. Tobacco amblyopia is most frequently met with among workmen who are able to smoke at their work—bricklayers, bootmakers, etc., P. Dunn (Lancet, December 1, 1906).

APLASTIC ANÆMIA, NATURE OF.

Aplastic anæmia is a variety of progressive pernicious anæmia, the essential features of which are a rapidly fatal course; a marked reduction in the number of red blood-corpuscles; a greater proportionate reduction in the amount of hæmoglobin, resulting in a low color index; a leukopenia with a relative lymphocytosis; an absence of megaloblasts, and usually normoblasts. Post-mortem: the characteristic finding is a pale bone-marrow in which the signs of erythrocytic and granulated leucocytic formation are wanting, The differences between aplastic anæmia and the usual form of progressive pernicious anæmia result entirely from the absence of regenerative processes in the former. The blood-picture in aplastic anæmia is the result of two factors, one the hæmocytolysis, and the other the failure of regeneration on the part of the bone-marrow. The failure of regeneration of the blood-elements of the bone-marrow represents the result of one of the three following conditions: (*a*) a simple deficiency of the regenerative powers; (*b*) an inhibitive action on the bone-marrow by the factors producing the destruction of the blood-elements; and (*c*) a true aplasia of the bone-marrow. If there be a true aplasia it is probably of recent origin, for if it were of long duration there would in all probability have been manifestations of a deficiency in blood-formation before the advent of the hæmolytic agent.

The relations of lymphocytes to leucocytes and red blood-corpuscles in aplastic anæmia lend evidence to the view that lymphocytes are not a specific product of the bone-marrow. R. S. Lavenson (American Journal Medical Sciences, January, 1907).

APPENDIX, FUNCTION OF THE.

The author concludes that inasmuch as the intestinal tract is not complete in development until about the twentieth or twenty-fifth year of life, and the appendix is well developed at the end of the first or second year of life, as well as the fact that an appendix shows no fibrous tissue increase within its submucous coat, the evidences of impeding obliteration at the age of 20 years seems rather convincing in the assumption that the appendix, if it has a function, must have its greatest physiologic activity during the period taken by the intestinal canal to become

fully organized. Consequently, he takes the position that the appendix assists the general intestinal canal in a certain measure during its developmental period, or until the latter organ is well able to take care of itself, thus constituting somewhat of a compensatory function. What the direct value of this secretory function is to the economy or to the digestive process, he is unable to say, but he suggests that if the theory advocated by Bunge is in reality an accepted fact, the theory herein advocated must comparably be the same. E. A. Hoefer (St. Paul Medical Journal, January, 1907).

ARSENIC, INFLUENCE OF, ON METABOLISM.

In spite of the much greater amount of fat laid on by animals which are given arsenic, the writer has found that the percentage of nitrogenous constituents is almost exactly the same as in the leaner control animals, and that this demonstrates clearly that the increase of weight in such animals is due not alone to the fat, but also and in great part to the nitrogenous constituents, *i.e.*, to the albumin. The writer explains their greater fatness as due to better nutrition and assimilation in the animals to which arsenic was given, with diminution of the watery constituents of their tissues and the absolute increase of the albumin. Lardelli (Münchener medizinische Wochenschrift, December, 1906; New York Medical Journal, January 5, 1907).

ARTERIOSCLEROSIS.

From his observations on the artificial production of arteriosclerosis, the author concludes that the effect of the high-pressure drugs (adrenalin,digitalin, and barium chloride) on the arteries is a degenerative one. The muscle-cells of the media are first attacked, while the elastic fibers of this layer are also involved later. At a proper stage of the degeneration a fatty change can be demonstrated in the tissues, followed by calcification. The middle zone of the media is always involved. Occasionally secondary reactions occur in the intima which are of a proliferative nature. The effect of adrenalin is not abolished by lowering the blood-pressure with nitroglycerin. The aneurisms are produced as a result of the destruction in the media. These experimental lesions are in every respect similar to the Moenckeberg type of arteriosclerosis.

The effect of diphtheria toxins on the arteries is similar to that of the adrenalin series. Typhoid and streptococcus infections produce little destruction of tissue-cells, but tend to stimulate cell proliferation in the intima and inner layer of the media. Vessel changes are brought about by these infections which correspond to arteriosclerosis.

These experiments show that there is definitely a form of arteriosclerosis in which not a preliminary weakening of the media, but a primary proliferation of the intima, including the musculo-elastic layer, is the prime feature. Undoubtedly the Moenckeberg type of medial degeneration is common. But undoubtedly also in syphilitic and other cases a secondary and adoptive or compensatory overgrowth of the intima is met with. O. Klotz (British Medical Journal, December 22, 1906).

BASEDOW'S DISEASE, THE HEART IN.

The histories of fourteen cases of exophthalmic goiter observed by the writer are reported, in which he made a special study of the condition of the heart. He observes that the heart in

Basedow's disease is particularly sensitive to fatigue, soon using up its reserve force. There is slight increase in the diameters, especially the transverse, but they are transitory. The amount of fatigue of the heart is in relation to the general asthenia of the patient. The return to its original size is almost complete; in advanced cases of the disease the return may be slow and incomplete. The murmurs heard in the disease are very variable, and change rapidly in a short period. The condition of the blood has no influence in the production of such murmurs. Guido Dernini (La Riforma Medica, October 27, 1906; Medical Record, January 12, 1907).

BIER'S STASIS, ACTION OF.

The writer's experiments were made on rabbits. Venous stasis was induced by a rubber tube bound about the groin, and then tubercle bacilli, staphylococci, and anthrax bacilli were injected, some subcutaneously, some into the knee-joint. In the experiments with tubercle bacilli the stasis was maintained an hour or two daily for several weeks; in those with staphylococci, for twelve to twenty-four hours, with intervals of twenty-four hours; in those with anthrax, for twenty-four to forty-eight hours once only. The most favorable results were obtained in the experiments with anthrax bacilli. After the stasis had been maintained from thirty-six to forty-eight hours, the inoculated bacilli were found to be reduced to slight degenerated traces, and the animals remained well after the rubber band had been removed. Less favorable results were obtained in the experiments with staphylococci, and in those with the tubercle bacilli the stasis treatment was almost without effect.

The author ascribes the beneficial effect of Bier's stasis in acute infectious diseases to the bactericide action of the fluid collected in the tissues, to restriction of resorption, to thinning of the toxins, and to the pathological changes induced in the tissue metabolism. Von Baumgarten (Münchener medizinische Wochenschrift, November 27, 1906; New York Medical Journal, December 29, 1906).

BLOOD-PLAQUES IN ACUTE INFECTIOUS DISEASES.

At the acme of the fever, the writer found a decreased number of blood-plaques in measles, pneumonia, erysipelas, smallpox, membranous tonsillitis, and diphtheria. When the fever subsides and the disease begins to recede the number of plaques again increases. In scarlet fever the number of plaques is diminished only for a short time, and the subsequent increase is well marked. In the presence of complications (otitis, etc.) in scarlet fever, the number of plaques is temporarily diminished. In diphtheria the decrease in the number of plaques is very great and protracted. No appreciable effect was produced on the number of plaques by injections of antistreptococcus or antidiphtheritic serum. No relation seemed to exist between the number of plaques and the number of white cells, nor the number of red cells.

The author concludes that in infectious diseases there is a reaction by the organism in the shape of a decreased number of plaques, which later disappears when the infection is about to recede. The plaques, therefore, have a rôle to play in the defense of the organism against infection. They probably carry some protective substance. This theory is confirmed by the recent experiments of Wright, who found that the

blood-plaques are manufactured in the spleen and the bone-marrow from mononuclear giant cells—megakarocytes. As is known, the blood-making organs are sources of defensive substances, especially the bone-marrow. N. I. Tchistovitch (Roussky Vratch, November 11, 1906; New York Medical Journal, January 5, 1907).

CANCER, ORIGIN OF.

From his research on the mode of development of cancer from excessive and protracted Roentgen exposures, the writer concludes that the blood-vessels gradually become smaller and finally entirely obliterated under the influence of the x-rays. The epithelial cells become obliged to obtain their nourishment direct from the adjacent cells or tissues, and thus they assume the character of parasites. This explanation of the origin of Roentgen cancer applies also to other kinds of cancer for which interference with the blood-supply may be the primal cause. Roentgen cancers are particularly liable to develop on skin already the seat of some morbid process, such as erythematous lupus, and special care is needed in making exposures with such patients. He has had a case under observation in which a cancer developed on the part exposed in Roentgen treatment of lupus. M. O. Wyss (Beiträge zur klinischen Chirurgie, Bd. xlix; Journal of the American Medical Association, January 19, 1907).

CATARRH OF THE BLADDER.

Although not opposed to the local treatment of vesical catarrh, the writer is of the opinion that it should be used in those cases only in which internal treatment fails. It should not be undertaken without necessity, and physicians, he states, would be much less frequently placed in a position of being obliged to wash out the bladder if they more frequently made use of the old, tried remedies for cystitis. For washing out, the milder remedies will generally be sufficient, and especially the 3-per-cent. solution of chlorate of potash recommended by Boegehold; silver nitrate will only be necessary in rare cases. Boric acid and resorcin, both in 2- to 3-per-cent. solution, have also proved very useful. Washing out with permanganate of potash is not without danger, as the possibility is not quite excluded that the sediment caused may not in part adhere to the mucous surface of the bladder; and occasionally it may give origin to a concrement. C. Edelsen (Medical Press and Circular, November 21, 1906).

CEREBRAL ARTERIOSCLEROSIS, DEFINITE CLINICAL VARIETY OF.

The following symptoms are given by the author for cerebral arteriosclerosis: the patient complains of fugitive headache, often referred to the occipital region, of slight giddiness often coupled with a sensation of insecurity of station and gait which, however, is not attributed to giddiness, and of impaired snap or vitality. These symptoms may exist for several months or even years, before other and more striking symptoms call professional attention to the patient. The most striking feature of the disease, however, is the patient's appearance, which becomes immobile. This gives a characteristic attitude and gait, and to a lesser degree, a characteristic physiognomy. The gait is, perhaps, the most remarkable feature of the patient. The stride is short, oftentimes only a few inches, the feet widely separated and not lifted far from the ground, the rhythm of the movement

often slow, but sometimes rapid. When the patient turns, he often thrusts out the hands as if to seek support, though he rarely falls. In some instances, perhaps in all, the patient can run better than walk. Mental symptoms may or may not exist. In the majority of cases they are not conspicuous, consisting merely of some depression, indifference, and apathy. When the disease is far advanced, mental symptoms are more common.

At first sight the clinical picture reminds one of Parkinson's disease, but on close observation they have only one feature, immobilization, in common. There are no vasomotor symptoms and secretory symptoms, no marked alteration in the pitch of the voice, no characteristic tremor, no festination, or other striking feature of the latter disease. The objective symptoms, aside from those that have been enumerated, are few and inconsequential. The disease is essentially chronic and subject to little variation, save in the amount of headache, giddiness, and apparent emotional manifestation, which are variable. One of the most remarkable features of the disease is the occasional complete absence of visceral and skeletal arteriosclerosis. In such cases the diagnosis would be difficult because of the absence of increased blood-pressure, of palpatable thickening of the peripheral blood-vessels, and of alteration of the heart-sounds, were it not for the fact that the clinical picture which it produces is quite pathognomonic. Joseph Collins (Journal of Nervous and Mental Disease, December, 1906).

CEREBRAL BIRTH PALSIES, SURGICAL TREATMENT OF.

The author concludes that it seems reasonable that immediate surgical intervention in intracranial hæmorrhages of the new-born is justifiable in properly selected cases, as offering hope where no immediate hope seems otherwise to exist, and also from the standpoint of mitigating distressing sequelæ. Further, as diagnosis becomes more and more accurate with experience and careful observation, it may be that meningeal hæmorrhage will be more frequently discovered than at present, and it will thus be possible to operate early and obviate with certainty the secondary effects on the cortex arising from pressure. Early operation is found to be well borne. The blood is found coagulated as in similar conditions in the adult, and even when the hæmorrhage was basilar in a case of decompression operation was useful. After all operated cases it is advisable to assist the brain in its compensation and re-education of centers by a careful and thorough physical and mental training of the child. On the whole, however, the prognosis must be tentative, on account of the participation of the brain cortex in a possibly destructive process from the trauma and asphyxiation.

As regards surgical orthopædic treatment, nerve-transplantation would seem to conform most nearly to the indications, as the lesion is primarily one of the nervous system. Its object is to equalize innervation and thus relieve spasticity, spasm, etc., and to prevent contractures and deformities. Here, again, it is advisable to operate in early childhood, before atrophy, contractures, and joint changes have produced a deformity too exaggerated for easy correction. A careful differential diagnosis of the disease is, of course, absolutely necessary. Oppenheim emphasized this in calling attention to cases of muscular atrophy which had been operated on by

orthopædists under the belief that anterior poliomyelitis was present, and, of course, no improvement had taken place. Again, after the diagnosis is made, the exact amount of individual muscle-power must be ascertained by electrical tests, whatever operative procedures are decided on, in order that they may be successful, and it is advisable to begin experimentation in a given case in the lower extremity, as requiring less intricate muscle coördination than is required in the upper extremity. C. E. Atwood (New York Medical Journal, January 19, 1907).

CUTANEOUS CANCER, ERRORS IN TREATMENT OF.

The writer considers that every case of cutaneous cancer demands special consideration, special study, and special selective treatment. No one method of treatment of cancer is best or most efficient for all cases of operable cancer. All cases of multiple cutaneous cancer and all aged persons with cutaneous cancer require internal treatment in the form of diet and drugs, in addition to local measures. A diet of milk and green vegetables, and the avoidance of meats in general, and of meats of such organs as liver and kidneys in particular, and the avoidance of alcohols, are advisable in all cases of cancer, whether external or internal. Thyroid extract should be given in as large doses as can be borne, in all cases where there is a senile condition of the skin, and in most superficial epitheliomata.

A knowledge of the kind of cancer present, the pathological anatomy, and the manner of extension of the disease in general and of the special variety of the case to be treated, are necessary to a correct choice of method of treatment. When possible, all cases should be under observation at least one year after commencing treatment of any kind, in order to treat promptly any recurrence of the disease. Early diagnosis and correct treatment place cutaneous cancers among that class of diseases which do not deserve the name of *incurable* diseases, as almost without exception they can be treated successfully if the method employed be the correct one. A. R. Robinson (New York Medical Journal, December 29, 1906).

CYANOSIS.

Attention is called by the writer to a form of cyanosis of a somewhat fleeting character, attended occasionally by distressing symptoms, and while comparable in its physical appearances with the cyanosis observed in congenital heart disease, yet is free from cardiac lesion. It is the physical sign of a toxæmia, and the absence of heart-disease and the fact of the rather rapid appearance and equally rapid disappearance of the blueness point to the operation of circumstances which can be frequently controlled. The cyanosis is of the nature of an autointoxication with intestinal poisons, or it is the result of the ingestion of some of the synthetic drugs of the aniline class, many of which form the principal ingredient of proprietary medicines. The cyanosis of enterogenous origin is the result of the action of sulphur bodies or nitrites upon the hæmoglobin of the blood, converting it into methæmoglobin—a substance in which, although oxygen is present, it is so firmly retained that it cannot be dissociated for the requirements of the body. Aniline workers are subject to cyanosis, especially workers in nitrobenzene factories. Aniline vapors, when inhaled, produce symptoms more slowly than when the salts are ingested. The

symptoms are the same—nausea, vertigo, oppressive sleepiness, muscular pains, and a sense of weakness with tremors and anæsthesia. The skin becomes blue, the buccal mucous membrane, the gums, the conjunctivæ, the lobes of the ears, the face, the feet, and the hands showing the discoloration best. The cyanosis is not due to venous stasis, but depends upon a colored substance in the blood, probably methæmoglobin.

Raynaud's disease is a peculiar form of local cyanosis: blueness of the hands and feet. Three stages are described: local pallor (syncope), local cyanosis (asphyxia), and gangrene. The pathology of the conditions is unknown. The causes of tissue death are obstructed arterial circulation, impeded venous flow, obstructed capillary circulation owing to diseased walls of vessels, and death of the cells by poisons due to microbes. It would seem as if some peculiar local change occurred in the tissues of the part affected in Raynaud's disease, whereby, either in consequence of the contraction of arteries and veins due to some central nervous condition influencing the vasomotor center, or in consequence of altered chemical states of the blood or pathological changes in the walls of the minute vessels, that either of these conditions singly or combined, but accompanied by poisoning of the cells of the part, either through their own toxins or by poisons brought to them, is capable of causing death of the tissues and the formation of a gangrenous slough. T. Oliver (Lancet, December 29, 1906).

DIABETES, DIET IN.

The writer reviews the methods of treatment of diabetes mellitus and gives lists of various diets, including that of Seegen in full. The Winternitz milk cure and von Noorden's oatmeal cure are beneficial in suitable cases. Whatever form of diet is employed, it is essential to see that it is sufficient, and fats (butter, cream, oil, and lard) are more important here than in other conditions. Alcohol, taken moderately, is also recommended by the writer, as furnishing a useful fuel element, and as enabling more greasy food to be taken than could otherwise be the case.

In the condition of hyperchlorhydria complicating diabetes the diet is the same, and the medicinal treatment of the one also favorably influences the other. In achylia gastrica, however, in which animal food is not well borne, the condition is different, and a trial of the von Noorden oatmeal treatment would be appropriate. The main point to be observed in this treatment is that more carbohydrates must be given, and the condition of the urine must be watched to see how they can be borne. The writer gives a diet which he has successfully used in some cases of achylia in diabetes. Another class of digestive disturbances are catarrhal affections of the stomach and bowels, and in such cases the treatment must be directly against the acute conditions, and the diabetics must be left out of consideration until they are relieved. A bland meager diet is the main thing. When the acute stage is passed, the antidiabetic diet can be returned to slowly. M. Einhorn (Journal American Medical Association, December 29, 1906).

DIGITALIS HEART-BLOCK.

The history of a case is reported in which the use of digitalis was followed by a low and irregular pulse, the irregularity consisting in a dropping of the beats accompanied with precordial dis-

tress. Auscultation showed that the dropping was not due to the occurrence of extra systoles, but that during the intermission there was either absolute silence or, at most, a faint and indefinite soft sound over the base of the heart. Simultaneous tracings from the veins of the neck and the apical region showed two forms of irregularity, the first due to a blocking of the cardiac contraction wave passing from the auricles to the ventricles, while in the second form the beat was also dropped out, but there was no auricular pulsation in the pause of the ventricular rhythm. The author discusses the mechanism and causes of these phenomena, and assumes the probability of a block occurring above the auricles as well as at the auricular ventricular septum. A. W. Hewlett (Journal of the American Medical Association, January 5, 1907).

DIGITALIS IN VALVULAR HEART-DISEASE.

The writer states that digitalis should seldom, if ever, be given in cases of aortic regurgitation which has developed during or after middle life, since the ventricular wall is seldom perfectly sound under these circumstances; and never in patients who give evidence of myocardial degeneration or disease. If complete rest is obtained, digitalis is permissible and beneficial up to a certain point in young, otherwise healthy adults showing signs of circulatory failure, more especially when the aortic lesion is combined with mitral incompetence. The drug should be discontinued for some time before exercise is resumed, and this rule should be rigidly observed. Neglect of this precaution might be followed by rapid failure of the ventricle and sudden death. Theoretical considerations suggest that the utility of digitalis in aortic incompetence is strictly limited. It may be accepted as a good working rule that digitalis is beneficial in cases of aortic incompetence proportionally to the magnitude of the stress which has led to failure of the heart, and *vice versa*.

Digitalis is contraindicated in aortic stenosis apart from the appearance of cardiac failure. The author endorses the use of digitalis in cases of mitral insufficiency, but in mitral stenosis it can be of no benefit in the absence of failure of the right ventricle, and in this event, as long as the pulmonary blood-pressure has been raised to the point at which the maximum charge of blood is delivered to the left ventricle, the drug will again act prejudicially. W. W. Colbeck (British Medical Journal, December 1, 1906).

EPILEPSY AND EOSINOPHILIA.

Following up the known fact that epileptics often exhibit an excess of eosinophile cells in their blood, the authors have endeavored to find some connection between the occurrence of the epileptic fit and the numbers of the eosinophile cells in the circulating blood. The blood-films were stained with eosine in phenolized glycerine, and then with watery methylene blue. It was found that between the attacks epileptics show a more or less marked excess of eosinophile cells, and the authors believe that such cells indicate the presence of toxins in the blood. These cells often show definite signs of necrobiosis (cytolysis, rupture of fragmentation of the protoplasm or nuclei, or both) that are apparently not connected directly with the toxins. The percentage of eosinophile cells diminishes progressively during the three days preceding a fit; during the fit the percentage

is absolutely subnormal; after the fit it rises, reaching its previous maximum in from ten hours to about three days. The authors attribute the disappearance of the eosinophile white cells to the chemiotactic action of the circulating toxins, and partly also to cytolysis. They examined the blood of twelve epileptics. The eosinophile cells were mainly multinuclear, about one-quarter of them being uninuclear; they formed from 12 per cent. to 3 per cent. of the white cells present, averaging 6 per cent. A. Morselli and A. Pastore (Riv. Sperim. di Freniatria, Vol. xxxii, Fasc. 1-2, 1906; British Medical Journal, January 12, 1907).

EPILEPSY, IMPORTANCE OF EARLY DIAGNOSIS AND TREATMENT OF.

A diagnosis of epilepsy at the earliest possible stage of its development is essential to successful treatment. Convulsions from any cause and at any age are not to be regarded as of slight significance, but the possibility of the development of epilepsy in every case must receive careful consideration. Recurring convulsions in the young, associated with hereditary susceptibility to nervous diseases, should invariably be regarded as probably epileptic in their nature. The more insignificant the exciting cause, the stronger the indication of this disease should be regarded. It should be remembered at the same time that each return of the seizure renders permanent cure more doubtful.

In all cases in which obscure mental or nervous symptoms tend to recur periodically with normal intervals, the possibility or probability of epilepsy in the form of psychic, Jacksonian, or petit mal seizures should be considered, and careful study be given to the symptoms; and when possible, the case should be placed under the care of an intelligent attendant until the diagnosis is positive. No unnecessary delay is permissible in these cases, for they are generally regarded as less amenable to treatment than the grand mal seizures, and the fact that most often the diagnosis is delayed in these types of the disease may account for the failure in results.

Though care should be exercised in doubtful cases, it is better to give the patient the benefit of the doubt and institute treatment early, even when a positive diagnosis of epilepsy is not possible, than to allow the condition to become chronic, and perhaps hopeless. The general care which should be given to a patient supposed to be epileptic would, in fact, benefit any obscure nervous disease, whether convulsive or not in its nature. A positive and early diagnosis is important, but the early treatment is of far greater importance, and proper treatment should be begun as soon as the diagnosis is reasonably certain, and should be persistently carried out until the result is assured. F. M. Stites (Medical Record, December 8, 1906).

GASTROPTOSIS IN RELATION TO HYPERCHLORHYDRIA.

Relaxation of the abdominal muscles is the essential feature in gastroptosis, or abdominal atony, or enteroptosis, or splanchnoptosis—all of these terms meaning one and the same thing. The abdominal muscles have the function to keep the abdominal viscera in their physiological position; as soon as they become relaxed these viscera will sink down and there will be general ptosis of the abdominal organs, the stomach, the kidneys, the intestines, and sometimes the liver, the spleen, and even the uterus. It depends on the degree of the

relaxation of the abdominal walls whether all the organs are concerned, and how much the one or the other is displaced.

Another function of the abdominal muscles is to control the distribution of fluids in the abdomen, to regulate circulation and secretion. All forms of anomalous gastric secretion may be due to gastric atony, hyperchlorhydria, hypochlorhydria, and achylia. To strengthen the abdominal wall there is no other method so rational, nor more directly to the point than plaster strapping; it has decided advantages over all others, and it is the only one which acts on the crosswise fibrous arrangement of the abdominal muscles. The plaster used for this strapping is zinc oxide adhesive plaster on moleskin, seven inches wide and as long as the circumference of the waist measure of the patient. The abdomen is shaved down to and including the symphysis, and is washed with ether. The large piece of plaster is first applied, the point being placed over the symphysis and the ends meeting and overlapping in the back. The plaster should run above the crest of the ilium. The smaller pieces are then applied, serving as an additional support of the abdominal walls. Considerable force may be used in applying the side pieces, which run from the hypogastrium over the iliac and inguinal regions and meet at the spine.

In order to guard against loosening of the plaster, care should be taken that the edges are perfectly adherent. The plaster is worn for five weeks, usually without discomfort to the patient, who, on the contrary, feels a sense of relief by the support. The composition of the plaster prevents, as a rule, any dermatitis, unless the plaster becomes loose and air penetrates. E. Reissman (Medical Record, December 15, 1906).

GLANDULAR INVOLVEMENT OF INFECTIOUS DISEASES.

The writer believes that the early diagnosis of the various infectious diseases is greatly helped by the proper recognition of the general involvement of the lymphatic glandular system. The lymph-nodes are enlarged in infectious diseases some days before the development of the diseases. The enlargement is most marked between the ages of three and eighteen years. It is not produced by the initiation of the rash, but is due to the absorption of the poison or toxin.

As a rule, nursing infants do not contract infectious diseases readily, as the tonsils are small and inactive. The writer believes that the tendency to contract infectious disease would be much lessened if the mouth and tonsils were in a healthy condition. The enlargement of the nodes is more marked in certain infectious diseases than in others. They are larger in erysipelas, measles, and rubella, than in scarlet fever and whooping-cough. They resolve more quickly in diphtheria under the influence of antitoxin than they do in measles and erysipelas. In all infectious diseases (except those of local inoculation) the poison most likely enters the system through the tonsils. Suppuration does not take place in the nodes unless there is a mixed infection.

In visiting a case of infectious disease, all the other children in the family who have been exposed should be examined, and if their lymph-nodes are found to be enlarged they too should be immediately isolated. This will do away with the dangerous custom of quartering such children upon friends and rela-

tives, with the inevitable result of spreading the disease. A. E. Vipond (British Medical Journal, December 15, 1906).

GOITER, ENDEMIC.

Goiter is regarded by the writer as a general disease of an infectious nature, in which the seat of infection is most probably the intestinal tract and of which the enlargement of the thyroid is the dominant symptom. These conclusions are based on the following facts: Goiter is caused by an organism invading the body of man. All the evidence so far accumulated points to the intestine as a seat of infection. In nature, it lives in the soil of infected localities, and is very limited in its distribution. It is conveyed to man in the drinking water, by contact with soil, or by other means yet undetermined. It requires a calcareous soil to enable it to flourish and produce goiter. It can be conveyed by man to places where the disease has not hitherto prevailed, and, if the conditions are favorable there, it can produce the disease. The virus is, therefore, given off by persons suffering from the disease, in some way as yet undetermined, but not unlikely by means of the fæces. The fact that it requires peculiar conditions of soil, etc., suggests a stage of development outside the body of man. There is reason to believe that it is destroyed by admixture with pure water. The organism flourishes best where there is a certain degree of moisture, and requires a certain temperature, in all probability, to favor its development. Where it gives rise to epidemics the most susceptible individuals suffer most and first, namely, the children. There is reason to believe that where the disease has prevailed for years a natural immunity is developed. Those who come in close contact with the soil in their daily occupations suffer most. Newcomers to a district acquire the disease very rapidly, from three weeks to one month being the minimum incubation period of this disease; 20 per cent. of newcomers suffer.

Goiter shows a marked seasonal prevalence. It disappears when the patient leaves the infected area, and cannot arise in the new area to which the patient goes unless the previously mentioned conditions for the growth of the organism are present, calcareous soil, moisture, virus of the disease, and susceptible individuals. The duration of life of the organism in the body of man is not great, as shown by the diminution in size of the gland when the patient leaves the infected area. An organically impure water may favor the spread of the disease. All races suffer, women more than men. Certain conditions, such as emotional disturbances, attacks of fever, etc., act as predisposing or favoring causes. Boiling or filtering the water alone does not prevent or cure the disease as long as people live on the infected site. Large communities living on the infected site often escape, however; groups of houses also escape the disease.

Certain blood-changes occur which suggest, from analogy with other diseases, a parasitic or bacterial invasion of the intestine. Goiter is rapidly cured by the administration of intestinal antiseptics. In conclusion, the author describes an organism found in the fæces of goiterous patients, which may possibly cause the disease. R. McGarrison (Lancet, December 8, 1906).

GRAVES'S DISEASE, TREATMENT OF.

Two cases of Graves's disease have been treated with marked success by

the writer by means of parenchymatous injections of iodine and ergotin. A saturated alcoholic solution of iodine diluted with 30 per cent. of water was injected in doses of $^1/_3$ to $2^1/_2$ cubic centimeters into the tissue of the thyroid, and similarly 1 cubic centimeter of 10-per-cent. solution of ergotin. That the result was due to some direct action on the thyroid gland, some process of thyreolysis, was shown by the fact that when the injections were made into other parts of the body no beneficial result followed. In one of the cases, of four months' duration, the treatment was begun on January 28, 1901. Iodine injections, starting with $^1/_3$ cubic centimeter and going up to $2^1/_2$ cubic centimeters, were given daily for twenty-five days and then suspended for a month, after which ergotin was given, 1 cubic centimeter every five or six days, for twenty injections. After the first iodine treatment a marked improvement in the circulatory and psychical symptoms was noticed. The ergotin injections had to be discontinued, owing to the pain and occasional rigor and fever caused by them, although by this time the patient was nearly well. A month's rest was given and then seven or eight injections of the iodine were given. No other treatment was used. The patient has remained well since. The other case was very similar. Francesco (Gazz. degli Osped., August 6, 1906; British Medical Journal, December 15, 1906).

HÆMOPTYSIS, AMYL NITRITE IN.

Further experience in the direction suggested by the title has convinced the writer of the value of this drug. Several additional cases are reported. The author now has records of 34 cases of hæmoptysis, and in all but one the bleeding ceased immediately upon nitrite of amyl inhalations. The quantity used has been from 3 to 34 minims. He calls special attention to the work of Pic and Petijean, who have demonstrated experimentally the action of the remedy. Dogs weighing from 15 to 20 kilograms were curarized, part of the chest-wall removed, and artificial respiration was performed. Amyl nitrite was then injected into the femoral vein. Within a few seconds white patches commenced to form on the surface of the lung. These steadily extended, then coalesced, so that finally in from two to three minutes all, or nearly all, the lung parenchyma became exsanguine. This extreme effect lasted several minutes, but from seven to ten minutes elapsed before the normal rose color returned. It would seem that the vasomotor influence of the drug, at any rate upon the pulmonary circulation, is more enduring than has been suspected. The hæmostatic power of the vascular change was demonstrated by snipping the anæmic lung with scissors, when hardly a drop of blood exuded. Pic and Petijean consider that the drug acts through an active vasoconstriction of the pulmonary system, not less than through vasodilatation of the systemic periphery. They state that synchronously with the paling of the lung, there is a rise of pressure in the pulmonary artery. Against this conclusion, however, must be placed the clinical fact that amyl nitrite is equally efficient in many hæmorrhages from the systemic vessels. Menorrhagia, apparently from any cause, may, as a rule, be effectually controlled by a single inhalation a day. F. Hare (Lancet, November 24, 1906).

HAY-FEVER, QUININE-CAFFEIN EXTERNAL APPLICATIONS IN.

Helmholtz's method of local application of quinine for hay-fever has been modified by the writer by mixing caffein with the quinine and instilling it into the eye instead of the nose. Two parts of quinine and one part of caffein are mixed and a 1-per-cent solution made of the mixture. A few drops of this solution are instilled into the eye at the first symptoms of the typical itching in the inner angle, the patient reclining for a few minutes. The fluid bathes the conjunctiva and passes into the nose, flushing the nasal passages until a bitter taste is felt in the throat.

The writer states that, with the exception of the maxillary sinus, this disinfects all the parts where the hay-fever reflex symptoms are generated. The influence of the instillation is felt for four or six hours or longer, all the symptoms vanishing for this length of time. In cases of great sensitiveness a 1-per-1000 solution may be preferable, but the dilution with the lacrymal secretion generally renders the 1-per-cent solution none too strong. Boesser (Deutsche medicinische Wochenschrift, Bd. xxxii, Nu. 43; Journal of the American Medical Association, December 15, 1906).

HEART-SOUNDS, REDUPLICATION OF.

Reduplication of heart-sounds is a not uncommon sign. The cause may be either a synchronous contraction of the ventricles or the auricular sound. Normal persons with thin chest-walls usually show reduplication. Persons with thick chest-walls should not. In persons in whom no reduplication should be present it is a sign of positive value. Reduplication of the first sound means that the heart is not working properly. This may be due to nervous interference, as in persons with bad habits, or it may mean that the heart is hampered by external agencies, by pressure, or by traction, or, finally, it may mean that the heart-muscle is not efficient, due either to systemic or to inherent conditions. Reduplication of the second sound alone means and is usually only a more advanced degree of the same condition. Reduplication of the second sound alone means an alteration in the relative blood-pressure of the systemic and pulmonary circulations. H. C. Pillsbury (Journal of the American Medical Association, December 29, 1906).

INFANTILE ATROPHY AND INFECTIOUS DISEASES, HUMAN MILK IN.

The writer advises the use of human milk, even in small amounts, in infants who are not doing well on artificial feeding, particularly in infantile atrophy and in infectious diseases. The work of other authors is reviewed who believe that human milk contains substances of the nature of ferments which may be necessary to stimulate the stomach to secrete, and also which maintain the bactericidal power of the infant's blood, as is not done by substitute foods. Striking gains in weight were obtained by means of one to three breast-feedings a day, from women who came in from their own homes and at other times nursed their own children. F. P. Deny (Journal of the American Medical Association, December 8, 1906).

INTUSSUSCEPTION IN INFANTS.

Intussusception usually occurs in strong, fat children under one year, of whom the majority have been breast-fed and without a history of frequent attacks of enteritis. The fact that the disease is so common in infants and rare

in adults is as yet unexplained; it is probably due to some anatomical peculiarity. The sudden onset of the symptoms is characteristic; diarrhœa and the passing of blood is a late sign. A few hours after the intussusception the aspect of the child is distinctly "abdominal." A tumor is often present; rectal examination is very important, especially if done under an anæsthetic. Inflation, the writer believes, is rarely of value, and should only be tried when the laparotomy is necessarily delayed. Out of 19 cases operated on by the writer, 15 recovered from the operation and were discharged well. Of the 4 cases that died, 2 had irreducible conditions, where an excision was necessary. C. H. Fagge (Practitioner, December, 1906).

IRIDOCYCLITIS.

During the acute phases of iridocyclitis, the writer advises energetic local treatment with atropine, hot bathings, and, if necessary, leeches. The patient should be kept in bed and submitted to mercurial inunctions or baths, which often do good in cases in which there is no evidence of syphilis. Diaphoresis by vapor baths and hypodermic injections of pilocarpin may be tried in intractable cases. During the intervals between exacerbations the pupils should be kept moderately dilated with weak atropine (.05 per cent.). Neutral-tinted glasses should be ordered if the light is bright. The patient should have plenty of fresh air, good diet, and tonics. Above all, any source of septic infection must be eradicated. J. H. Parsons (Clinical Journal, November 14, 1906).

LEUCOCYTE COUNT IN DIAGNOSIS, VALUE OF.

Based on an experience of 8000 cases, the writer expresses the opinion that this is a factor of great importance in the diagnosis and prognosis of many inflammatory conditions. The increase in the relative number of polynuclear cells is an indication of the severity of the toxic absorption, and the degree of leucocytosis is an evidence of the body resistance to the infectious material. It was also found that purulent exudates were rarely present with low polynuclear percentages, irrespective of the leucocyte count. High polynuclear percentages almost invariably indicate purulent exudates, even when the total leucocyte count is low. In children the results of this method of procedure are less satisfactory than in adults. When pus is so confined that there is no toxic absorption, or when a purulent exudate results from tuberculous or typhoid infection, then there is no leucocytosis and no polynuclear increase. The author believes that the method merits further trial and investigation, and that its failures should only stimulate to further efforts. F. E. Sondern (American Journal of Medical Sciences, December, 1906).

MASTOIDITIS AND TEMPOROSPHENOIDAL ABSCESS.

On account of the poorly defined symptoms of temporosphenoidal abscess in many cases, the diagnosis is often most difficult, and this is especially so in the early stages, when practically all symptoms may be entirely absent, while at a much later period, when intracranial symptoms become unduly prominent, great difficulty may again be encountered in differentiating a cerebral abscess from some other complication, such as a localized meningitis, for instance. It must also be remembered that in children an uncomplicated mastoiditis may present such bizarre or severe symptoms

that a brain abscess is seriously considered, when the entire trouble is limited to the middle ear and mastoid tissues, although in such cases a slight localized meningeal congestion undoubtedly coexists. Seymour Oppenheimer (New York Medical Journal, December 29, 1906).

MIGRAINE AND EPILEPSY.

Migraine, according to the writer, comes into the borderland of epilepsy in many ways. The two affections may alternate in the same patient, or sometimes epileptic attacks and headaches continue together, but in such cases the latter is seldom definitely hemicranial, unless the epilepsy is only the minor form. The most frequent prodroma of migraine is visual, and is so characteristic as not to lead to confusion with epilepsy. The most frequent form is that of a small star near the fixing point; it enlarges on one side, its rays expanding into zigzags, often colored—the "fortification spectrum"—within which vision is dimmed. It lasts a quarter of an hour or more, and as it ceases the headache comes on, usually on the opposite side of the head. Another premonitory symptom is a sensation of tingling ("pins and needles"), which is felt in the hand and slowly ascends the arm as a zone, leaving behind it numbness and diminished sensibility. This also lasts a quarter of an hour and is followed by headache on the opposite side of the head. It resembles the aurora of epileptiform fits, which are caused by organic disease of the cortex, tumor, or an old stationary lesion in "organic epilepsy." But the aura of epilepsy occupies only a few seconds. When the right arm is affected there may be some degree of transient aphasia in both affections. The sensory disturbance in migraine may affect both the hands, but never in Jacksonian epilepsy. The aura of migraine never begins in the foot. It must be remembered that the sensory prodroma of migraine may occur alone without succeeding headache to emphasize its nature, and be erroneously taken for minor epilepsy. Vertigo may be met with as a premonitory symptom of headache, and give rise to confusion. Lateral hæmianopia, which often accompanies migraine, is unknown as the aura of an epileptic attack. The pain of migraine is accompanied by oversensitiveness to sensory impressions; it is increased by light and sounds, so that darkness and silence are needful for the endurance of the suffering. A very rare and merciful effect of the pain is sleep; it makes the diagnosis between migraine and epilepsy very difficult. The intolerance of sensory impressions caused by the pain may pass into a state of stupor, during which the pain is apparently felt, but is not afterwards remembered. The condition is often attended by quiet delirium.

In conclusion, the author holds that while there is some relation between migraine and epilepsy, yet the evidence is very slight. All that can be said is that in each malady a state of nervous tension seems slowly to develop, which is at least relieved by a violent functional disturbance. The differences between the two conditions are definite and distinctive. The brief warning of epilepsy is not met with before migraine; severe pain of long duration does not follow epilepsy, nor is it one-sided. Vomiting in epilepsy occurs soon after the fit, and not after the headache has lasted some hours, as in migraine. Bromide, so often efficient in epilepsy, has much less value in migraine, in which nitroglycerine is of service, especially if com-

bined with strychnia. W. R. Gowers (British Medical Journal, December 8, 1906).

NEURALGIA OF THE TONGUE.

Neuralgia of the tongue is extremely rare, yet in the last year the writer has seen three cases of the affection. All of the patients were men, moderately neurasthenic and suffering from chronic constipation. In none of the cases were either the glossopharyngeal or hypoglossal nerves affected. The pain involved only the domain of the lingual nerve, and the anterior third of the tongue, which is supplied by the chorda tympani, was not included in the painful area. In each case cure was effected by relieving the tendency to constipation, and the author ascribes the condition to the absorption of toxins from the intestines. Hoeflmayer (Berliner klinische Wochenschrift, December 17, 1906; Medical Record, January 12, 1907).

OZÆNA AS A CONTAGIOUS DISEASE.

Ozæna is believed, by the writer, to be a contagious disease, and in order to make his point he indicates a number of particulars in which the condition may be compared to syphilis and to gonorrhœa in its clinical course. A number of instances are also cited that have come under the author's observation, in which children have contracted the disease from each other or from an infected mother or nurse, and married people have acquired it from a diseased partner. Apparently the intimate contact of constant living together is necessary for the infection to be transmitted, but the writer believes that enough cases are on record in which ozæna has developed as a consequence of continued association with another person suffering from the malady to dispel all doubt as to its contagiousness.

The author speaks of four different microörganisms which have been described as the etiological agent, but expresses his own belief in the pathogenicity of the coccobacillus to which is attached the name of Perez. The cultures of this organism develop the characteristic fœtid odor, and when inoculated into the veins of an animal give rise to atrophic rhinitis. The author accordingly concludes that persons suffering from ozæna should observe all possible prophylactic precautions toward other members of their families, especially toward children. Lermoyez (Berliner klinische Wochenschrift, November 19, 1906; Medical Record, December 22, 1906).

PELVIC INFLAMMATION, APPENDIX IN RELATION TO.

The association of appendicular and pelvic disease is due to contiguity rather than continuity of structure. The accidental inward direction or pelvic position of the appendix is the chief factor in this association. The appendix or the pelvic organs may provide the primary source of disease. Appendicitis is a frequent source of dysmenorrhœa and its associated mucous colitis. The association of appendicitis with pelvic disease is the exception and not the rule. The appendix is not a vestigial structure, but a highly differentiated portion of the intestinal tract, and plays an important part in intestinal digestion. The systematic removal of the appendix during laparotomy for pelvic disease in the absence of evident disease is not justifiable. T. A. Helme (British Medical Journal, December 15, 1906).

PERITONITIS, ACUTE SEPTIC.

Morphine should only be given in the very earliest stage of peritonitis, and then only when given in one single and unrepeated dose. It masks the symptoms and produces an illusory sense of betterment, it markedly inhibits leucocytosis, and lastly, it increases intestinal paresis and furthers the accumulation of toxic fluids in the intestine. The action of purgatives is usually more beneficial, provided they are given early in the disease and produce some passage of flatus. Late in the disease they do harm. The best is calomel in grain doses, repeated at frequent intervals.

Since most cases of diffused septic peritonitis owe their virulence to the colon bacillus, our hope in the future lies in some form of anticolon serum, valent against the various strains of the bacillus. Unfortunately, at present such an antidote is not forthcoming. The streptococcal cases are so rapidly fatal, that sera are likely to be of little service. In the gonococcal, pneumococcal, and staphylococcal forms, however, the patients produce their own antitoxins, and, aided by wise surgical interference, often recover. As a rule, the surgeon should regard the upper or diaphragmatic area of the peritoneal cavity as sacred; free irrigation of this area will wash away the serous exudates containing the active phagocytes. The primary seat of infection must be sought for and attacked, local abscesses drained, the perforated appendix removed, the perforated bowel sutured, the gangrenous intestine sequestered and removed, etc. The removal of the primary focus should be followed by dry sponging, local and open irrigation, and free drainage. Evisceration is fatal, and free irrigation is only called for in very mild cases, or in the virulent streptococcus or pyocyaneus infections. Even here the diaphragmatic area should be let alone.

The writer sums up the question of irrigation as follows: It is beneficial where the peritoneal cavity contains foreign material, such as blood, gastric or duodenal contents, or fæcal matter, infected bile or urine, capable of removal by flushing. It is useful locally for the removal of purulent matter at the primary focus of invasion, in which case the phagocytes are no longer living and active. It is harmful in the case of fibrinous deposit and sticky coils without fluid, and must be used with the greatest reserve, if at all, in the case of seropurulent exudates containing active phagocytes. Of the three depressing factors—anæsthesia, exposure, and handling—the last is by far the worst. A cheerful expression after operation is the best and most reassuring of signs. C. J. Bond (British Medical Journal, December 15, 1906).

PNEUMONIA, QUININE TREATMENT OF.

The writer testifies to the value of the Galbraith quinine treatment of pneumonia, reporting four cases in which it was successfully employed. He believes that in the large doses advocated by Galbraith quinine acts as a specific, as much so as antitoxin in diphtheria. He found that large doses of the drug were better borne by pneumonia patients than smaller ones, and thinks he might safely have given still larger ones than those of from 30 to 50 grains, which he employed. There were more symptoms of quininism with from 6- to 10-grain doses than with the larger ones. M. A. B. Smith (Journal of the American Medical Association, January 12, 1907).

SCARLET FEVER RASH.

The typical rash of scarlet fever is twofold in character, according to the writer: a finely punctate, slightly raised, papular portion, and an erythematous portion, the former being usually regarded as the more characteristic feature of the rash. The eruption is general, its tint varying from a rose pink to a light red. The characteristic tongue is at first white with the fungiform papillæ showing as red dots; later on it is clean and markedly red. In the fauces there is a ring of bright red injection, involving the free edge of the palate and tonsillar pillars.

The true eruption of measles is sometimes preceded by a bright red rash suggestive of scarlet fever; it is usually erythematous and not punctate, catarrhal symptoms are present and also Koplik's spots. In smallpox, prodromal rashes counterfeiting scarlet fever are very common; they are, however, almost purely punctate, and the general symptoms (severe headache and backache, high fever, and an absence of sore throat) usually serve to differentiate these cases, the throat signs being the really important confirmatory point in the diagnosis of such cases.

The writer calls attention to the extremely unfavorable prognosis in cases of diphtheria in which hæmorrhages appear in the skin. They are only met with in cases which have escaped early treatment with diphtheria antitoxins; they occur almost exclusively in patients under twelve years of age, and are most common in cases of severe faucial diphtheria usually associated with nasal diphtheria. Persistent epistaxis on the fourth or fifth day often precedes the skin hæmorrhages, also persistent vomiting and evidences of cardiac failure. The duration of life after the hæmorrhages is usually four or five days. J. MacCombie (British Medical Journal, December 22, 1906).

URÆMIA IN THE TUBERCULOUS.

It has been noticed by the writer that in patients with chronic pulmonary tuberculosis complicated with insufficiency of the kidneys from any cause, there ensues a slow, complex, progressive, general intoxication, which entails uræmic symptoms of a peculiar character. It is a chronic uræmia, assuming usually the respiratory or gastrointestinal type, but occasionally the cerebral type with subdelirium or coma. There does not seem to be any tendency to convulsions or epileptiform seizures, even in children, and the type continues unmodified. Differentiation of uræmia in the tuberculous is sometimes difficult, as the physician is inclined to attribute to the tuberculosis the dyspnœic or gastrointestinal disturbances, or to accept the existence of meningitis when the insufficiency of the kidneys leads to subdelirium or coma. P. Teissier (Presse médicale, Vol. xiv, No. 95; Journal of the American Medical Association, January 19, 1907).

WOOD-ALCOHOL POISONING.

The writer states that wood-alcohol poisoning and the amaurosis produced thereby is unknown in England, and is rarer in Canada than in the United States. Usually within twenty-four hours of the absorption of the poison, either by the stomach or by inhalation of the fumes mixed with rebreathed air, the patient complains of nausea, vomiting, abdominal distress, weakness of the extremities, pallor of the face, and coldness of the hands and feet. He generally has severe headache, difficulty of breathing, and partial unconsciousness

which may deepen into coma and be followed in twenty-four to forty-eight hours by convulsions and death. The eyesight, when large doses are taken, suffers more or less in the majority of cases, although it may remain good for several days, and may not be affected until almost every other sign of the affection has passed off. Whether it shows itself early or late, whether partial or total, it is almost always followed in a few days by more or less complete return of vision; in some cases central acuity may again become normal. After a time, however, in spite of this apparent improvement—often attributed to the effects of treatment—sight again becomes defective, the patient sees less and less, and, as a rule, becomes totally and permanently blind. The visual fields are generally contracted, and absolute central scotomata can be mapped out. At this stage of the intoxication the pupils are widely dilated and do not respond to light or accommodation. The characteristic ocular lesion is an optic neuritis, which is generally recognizable by the mirror in the early days of the intoxication. The optic outlines are blurred, there is some papillary œdema, and the central vessels are distinctly engorged. These organic alterations correspond closely to the symptoms. As soon as the acute papillitis subsides, vision somewhat improves, to be followed by a postneuritic atrophy and permanent loss of sight.

The treatment of the eye-lesions in wood-alcohol poisoning is far from satisfactory. Pilocarpin sweats with potassium iodide or sodium salicylate in the early stages, and the use of full doses of strychnine hypodermically when optic atrophy declares itself, may be of some value. The intoxicant is nearly always the so-called "purified" or "deodorized" wood-alcohol, used either as "mixed drinks" or as an adulterant of, or substitute for, ethyl alcohol. C. A. Wood (Brit. Med. Jour., Dec. 29, 1906).

THE MILITARY SURGEON.

The January number of our valued contemporary, "The Journal of the Association of Military Surgeons," appears under a new name, "The Military Surgeon," the former being retained as subsidiary title. But few of our readers appreciate the fact that this periodical, so ably edited by Major James E. Pilcher, is the pioneer military medical journal in the English language, and that in the military sanitary departments of all countries it stands among the first as a guide. Its success has been remarkable—a result due to the skill and patriotism of its editor, and the excellent articles it invariably contains.

Book Reviews

RECENT ADVANCES IN PHYSIOLOGY AND BIO-CHEMISTRY. Edited by Leonard Hill, M.B., F.R.S. 740 Pages. New York: Longmans, Green & Co.; London: Edward Arnold. 1906.

This work meets a long-felt want in view of the amount of labor now being bestowed upon subjects collateral to practical medicine and the need of a thorough knowledge of normal conditions for the comparative elucidation of morbid processes. General text-books of physiology hardly afford the kind of information that the progressive physician requires; being intended for students, they are usually too elementary, and the desire to limit the information furnished to established facts deprives the reader of the immensely suggestive investigations in

new lines of thought that are appearing in various directions. The editor, Dr. Leonard Hill, states that "the book was designed to set before the student of medicine the progress made in those branches of physiological study which have an immediate bearing on pathology and therapeutics." He has admirably carried out his purpose.—C. E. de M. S.

ABDOMINAL OPERATIONS. By B. G. A. Moynihan, M.S. (London), F.R.C.S., Senior Assistant Surgeon at Leeds General Infirmary, England. Second Revised Edition, Greatly Enlarged. Octavo of 815 Pages, with 305 Original Illustrations. Cloth, $7.00 net; Half-Morocco, $8.00 net. W. B. Saunders Company, Philadelphia and London, 1906.

In this book on abdominal operations, by Moynihan, the medical profession has received a valuable addition to their library. The author has successfully written a clear and concise treatise on the present-day technic of abdominal operations. He divides the subject into five sections, each with from eight to twelve chapters. *Section 1* deals with general considerations, and embraces chapters on bacteriology of the stomach and intestines; general remarks upon the preparations for abdominal operations; the conduct of the operation; the after-treatment of the patient; complications and sequels; abdominal incision; penetrating wounds of the abdomen; the surgical treatment of acute peritonitis; tubercular peritonitis; subphrenic abscess; the surgical treatment of visceral prolapse. *Section 2*, operations upon the stomach. *Section 3*, operations upon the intestines. *Section 4*, operations upon the liver. *Section 5*, operations upon the pancreas and spleen. The different subjects are handled in a straightforward manner, the pros and cons of various methods discussed, and the author's personal experience freely quoted. The illustrations deserve special mention; they add greatly to the value of the text. The typographical embellishment is of the first order.—T. A. E.

A TEXT-BOOK ON THE PRACTICE OF GYNECOLOGY. For Practitioners and Students. By W. Easterly Ashton, M.D., LL.D., Professor of Gynæcology in the Medico-Chirurgical College of Philadelphia. Third Edition, Thoroughly Revised. Octavo of 1096 Pages, with 1057 Original Line Drawings. Cloth, $6.50 net; Half-Morocco, $7.50 net. W. B. Saunders Company, Philadelphia and London, 1906.

In this, the third edition of this text-book, the subject-matter has undergone a thorough revision and represents the author's present views on the advances made in gynæcology and abdominal surgery. The entire book reflects the author's own opinions on both the medical and surgical aspects of gynæcology. He has taken nothing for granted, and deals in a very concise and direct manner with all the conditions in gynæcological diagnosis and treatment. Of all recent text-books it is the one describing most thoroughly the many details of treatment and of operative technic connected with the subject. A word of praise is due the numerous illustrations—they are clear, well executed, and add much to the value of the book. To the student and general practitioner, as well as to those who are dependent upon books for their knowledge of this subject, this book can be most highly commended.—T. A. E.

A TEXT-BOOK OF OBSTETRICS. Barton Cooke Hirst. Illustrated. Fifth Edition. W. B. Saunders Company, Philadelphia and London.

In this edition the author adheres to the excellent arrangement of subject-matter which characterizes the earlier editions, and has added to the illustrations many valuable and accurate drawings, a number from life. The advancement in obstetric procedure is admirably reviewed with special care and exactness in detail.

The chapters on puerperal infection and gestational toxæmia have been amplified, and now contain the most recent of accepted knowledge and theories on these subjects as considered by one familiar with their complex aspects, and singularly fitted himself, by practice and study, to write upon them for others. The whole book, in fact, reflects the exceptional qualifications of its author for discussion in detail in a field so rich in material as to offer a constant temptation for digression unimportant to the essential line of thought.

Dr. Hirst, however, has neglected no legitimate opportunity to treat at sufficient length all those special divisions and subdivisions of the subject which are of the greatest interest and suggestiveness to readers. This is notably true of the chapter on obstetric operations and of that on pathology of labor, in which case it would have been a real loss if he had seen fit to adapt an abstractive method.

There is, indeed, little to be desired in the way of a practical obstetric work which the present volume does not supply: and the fifth edition will undoubtedly deepen the respect and regard in which the author is held, and achieve greater success than that so deservedly won by former editions.—G. W.

SURGERY: ITS PRINCIPLES AND PRACTICE. In Five Volumes. By 66 Eminent Surgeons. Edited by W. W. Keen, M.D., LL.D., Hon. F.R.C.S., England and Edinburgh, Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Volume I. Octavo of 983 Pages, with 261 Text-illustrations and 17 Colored Plates. Per volume: Cloth, $7.00 net; Half-Morocco, $8.00 net. W. B. Saunders Company, Philadelphia and London, 1906.

Contributors to the work: Robert Abbe, M.D.; J. George Adami, M.D.; E. Wyllys Andrews, M.D.; G. E. Armstrong, M.D.; Thomas L. Bennett, M.D.; A. D. Bevan, M.D.; Warren S. Bickham, M.D.; John F. Binnie, M.D.; J. Bland-Sutton, F.R.C.S.; George E. Brewer, M.D.; A. T. Cabot, M.D.; Hampton L. Carson, Esq.; E. A. Codman, M.D.; Wm. B. Coley, M.D.; W. M. L. Coplin, M.D.; George W. Crile, M.D.; Harvey Cushing, M.D.; J. Chalmers Da Costa, M.D.; John C. Da Costa, Jr., M.D.; E. B. Dench, M.D.; F. X. Dercum, M.D.; G. E. de Schweinitz, M.D.; David L. Edsall, M.D.; D. N. Eisendrath, M.D.; W. L. Estes, M.D.; J. M. T. Finney, M.D.; John A. Fordyce, M.D.; Chas. H. Frazier, M.D.; Leonard Freeman, M.D.; Frederick H. Gerrish, M.D.; John H. Gibbon, M.D.; George Gottstein, M.D.; Ludvig Hektoen, M.D.; Orville Horwitz, M.D.; Albert Kocher, M.D.; Karl Gustav Lennander, M.D.; Bransford Lewis, M.D.; R. W. Lovett, M.D.; W. G. MacDonald, M.D.; Edward Martin, M.D.; Rudolph Matas, M.D.; Chas. H. Mayo, M.D.; Wm. J. Mayo, M.D.; Maj. Walter D. McCaw; B. G. A. Moynihan, F.R.C.S.; J. G. Mumford, M.D.; John C. Munro, M.D.; John B. Murphy, M.D.; E. H. Nichols, M.D.; A. J. Ochsner, M.D.; Brig.-Gen. R. M. O'Reilly; William Osler, M.D.; Edmund Owen, F.R.C.S.; Jos. Ransohoff, M.D.; Admiral P. M. Rixey; John B. Roberts, M.D.; A. W. Mayo Robson, F.R.C.S.; W. L. Rodman, M.D.; Eugene A. Smith, M.D.; Harmon Smith, M.D.; Wm. G. Spiller, M.D.; Weller Van Hook, M.D.; J. P. Warbasse, M.D.; F. C. Wood, M.D.; George Woolsey, M.D.; Hugh H. Young, M.D.

The work before us, as shown in the first volume, promises to be not only complete and masterly, a credit to American surgery, but is international in character. The present reviewer permits himself to undertake the consideration of the first volume because the subjects presented are general in character and preëminently adapted to the needs of the practicing physician. With the best intentions in the world it will be impossible to publish as thorough a critique of volume one as would do justice to the individual essays, each one of which is a practical monograph. The reviewer has taken great pleasure in reading the first chapter, on "History," by Dr. Mumford, and he hopes that every one who can will likewise do so. The chapter on "Surgical Physiology," by Dr. George W. Crile, is delightful reading and most illuminating. Indeed, it has been a pet subject with the reviewer to urge the study of physiology by the surgeon himself, or in conjunction with a trained physiologist. It is given to the surgeon alone to observe the actual phenomena of functionation, when the obscuring envelopes of skin and upper tissues have been removed, and the workings of the human machine can be directly viewed. Surgeons have already discovered so much of practical value to the physiologist, their opportunities are so unique, that it is to be hoped that, in forthcoming volumes, this chapter will be ten times as long, or better, that there should be a book—and a large one—devoted to this subject.

Selecting those chapters for remark which practically seize his interest, the reviewer would like to mention the one on "Infection and Immunity" (Ludvig Hektoen) as especially

commendable. The subject is made plain and simple, so far as the present status of this subject permits it to be, and he ventures to express the hope that this whole subject will be greatly illuminated and simplified by the forthcoming second volume of Sajous's "Principles of Medicine." If there should be published only this one volume, it would prove of the utmost value to general practitioners. There is nothing in it that should fail to make itself clear to the mind of every man who attempts to understand and treat the ailments of the human body. It is impossible to take cognizance of each subject, to present every one of the chapter headings, but they include inflammation, abscess formation, etc., etc., and the consideration of a number of so-called surgical diseases; traumatic fevers, surgical tuberculosis, tumors, wounds, and contusions.—J. M. T.

INFECTION, IMMUNITY, AND SERUM THERAPY in Relation to the Infectious Diseases which Attack Man; with Consideration of the Allied Subjects of Agglutination, Precipitation, Hæmolysis, etc. By H. T. Ricketts, M.D., Instructor in Pathology, University of Chicago. 12mo. 600 Pages. American Medical Association Press, Chicago, Ill.

This is a good book. It is clear; it is full; it is comprehensive; it is philosophic; it wastes no words; it avoids dogmatism on disputed subjects; it is sufficiently positive when the evidence warrants. Part I considers parasitism, infectiousness, contagiousness, natural and acquired immunity, toxins and antitoxins, agglutination, precipitation, cytotoxins, phagocytosis. The side-chain theory of Ehrlich and its relation to the theory of phagocytosis, and the principles of serum therapy conclude the general considerations.

Part II deals with the special applications of these principles and considers the various infections under six groups: (1) those in which acquired immunity is chiefly antitoxic; (2) those in which acquired immunity is chiefly antibacterial; (3) acute infections in which lasting immunity is not established; (4) chronic infections in which lasting immunity is not established; (5) diseases of protozoon etiology; (6) diseases of doubtful or unknown etiology.

It concludes with an appendix which discusses the hypothesis of Welch, the agressins of Bail, and cobra lecithid. It has a good bibliography and an excellent index. As a piece of book-making, and we believe that in this respect we have the first product of the American Medical Association Press, it is also to be commended. We congratulate the author and the publishers.—S. S. C.

Books and Monographs Received

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"Syllabus of Lectures on Human Embryology: An Introduction to the Study of Obstetrics and Gynæcology, for Medical Students and Practitioners; with a Glossary of Embryological Terms." By Walter Porter Manton, Detroit, Mich. Third Edition, Revised and Enlarged. F. A. Davis Co., Philadelphia.——"Conservative Gynecology and Electro-Therapeutics. A Practical Treatise on the Diseases of Women and Their Treatment by Electricity." By G. Betton Massey, Philadelphia. Fifth Revised Edition. F. A. Davis Co., Philadelphia.——"The Medical Climatology of Southern California." By H. F. Lange Ziegel, New York. 1906.——"Some Tendencies in Medicine To-day." By William Clark, Cleveland, Ohio. 1905.——"The Vienna Clinics." By Myron Metzenbaum, Cleveland, Ohio. 1906.——"Ether-Air Anæsthesia; or the Drop Method for the Administration of Ether. From an Experience of Six Hundred and Fifty Cases." By Myron Metzenbaum, Cleveland, Ohio. 1906.——"The Results Obtained from the Radical Operation for Chronic Purulent Otitis Media." By E. B. Dench, New York. 1906.——"President's Address Before The American Laryngological, Rhinological, and Otological Society, Kansas City, 1906." By J. E. Logan, Kansas City.——"Gastrogenic Diarrhœa." By Charles D. Aaron, Detroit, Mich. 1906.——"The Combat of Scientific Medicine with Superstition." By James Dudley Morgan, Washington, D. C. 1907.——"Specimen of Pseudarthrosis or False Joint of the Ulna." By Myron Metzenbaum, Cleve-

land, Ohio. 1904.——"A Neisser Story." By E. S. McKee, Cincinnati, Ohio. 1906.——"How May Interstate Reciprocity be Best Accomplished?" By E. S. McKee, Cincinnati, Ohio. 1906.——"The Treatment of Sciatica." By E. S. McKee, Cincinnati, Ohio. 1906.——"Education in Sexual Subjects." By Ferdinand C. Valentine, New York. 1906.——"The Venereal Peril in its Relation to the State." By F. C. Valentine, New York. 1906.——"The Prevention of Venereal Diseases." By F. C. Valentine and T. M. Townsend, New York. 1906.——"Urethral Dilatations with Expansible Instruments." By F. C. Valentine and T. M. Townsend. 1906.——"The Nasal Skeleton of Amblystoma Punctatum (Linn)." By Robert J. Terry. 1906.——"Kinderhook Faunal Studies. IV. The Fauna of the Glen Park Limestone." By Stuart Weller. 1906.——"Action des Sels de Baryum sur l'Artério-sclérose." By François Cartier, Paris, France. 1906.

The following have been received from the United States Department of Agriculture, Washington, D. C.: "Report of the Secretary of Agriculture." 1906.——"Report of the Editor for 1906." By G. W. Hill.——"Forage-crop Practises in Western Oregon and Western Washington." By Byron Hunter. 1906.——"The Relation of Tuberculous Lesions to the Mode of Infection." By E. C. Schroeder and W. E. Cotton. 1906.——"Corn-harvesting Machinery." By C. J. Zintheo. 1907.——"Forest Planting in Eastern Nebraska." By F. G. Miller. 1906.——"A Rapid Method for the Determination of Water in Butter." By C. E. Gray. 1906.——"Hibernation and Development of the Cotton Boll Weevil." By E. Dwight Sanderson. 1907.——"The Gipsy Moth and How to Control It." By L. O. Howard. 1907.

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Sajous's Analytical Cyclopædia of Practical Medicine.

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Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

THE DIAGNOSIS OF ARTHRITIC LESIONS BY THE ROENTGEN RAYS.

BY CHARLES LESTER LEONARD, A.M., M.D.
PHILADELPHIA.

The frequency of fracture as a complication of sprains was but little appreciated before the Roentgen method of diagnosis showed that the majority of bad sprains were in reality associated with either intercapsular fractures, or fractures in which the line of fracture entered the joint but the fragments were held in place by the capsular ligaments.

The more accurate knowledge afforded by this method showed why "bad sprains" often resulted in loss of function or angular deformity. While many such cases are still being referred for examination too late for any but operative treatment, more and more are being examined early as routine practice, and are detected when exact knowledge makes proper treatment possible.

It is of these lesions that Sir William Bennett (British Medical Journal, December 8, 1906) has recently said:—

"The first essential in all cases of sprain is to determine whether fracture coexists, which can readily be done by the x-rays when they are available; *it should, indeed, be an accepted practice that, when possible, every sprain, especially those near joints, should be examined by the x-rays.* In the event of the x-rays being unobtainable, it is wise to regard any case in which symptoms of sprain near a joint are unduly exaggerated, as being complicated by fracture, especially if the parts concerned be the phalanges of the fingers or the metacarpal region. Figs. I to V are from x-ray photographs of cases of so-called sprain in which the bone-lesion had been undetected until revealed by the x-rays some time after the injuries had occurred."

"The frequent overlooking of bone-lesions in so-called sprains seems to be greatly due to the fixed idea on the part of many people that crepitus is a necessary symptom of fracture, and that absence of crepitus means absence of fracture, a sadly mistaken belief, inasmuch as, it need hardly be said, fracture often occurs in circumstances in which the detection of crepitus is impossible. On the other hand, crepitus after injury, especially if near a joint, may be elicited when no fracture is present. I have seen several cases of injury near joints in which fracture has been either diagnosed or strongly suspected on the strength of crepitus resulting from osteo-arthritis in the adjacent articulation."

In close relation to these sprain-fractures and fractures in which the joint is involved are those involving the epiphyseal lines or the diastases of childhood. These are lesions that frequently result in later loss of function in the joint or marked angular deformity. Here also can be included, as often resembling a sprain, those impacted fractures of the head of the bone that do not give rise to the characteristic symptoms of fracture, but in which a persistence of œdema, swelling, and tenderness, after the period usual in sprains, gives warning that some more serious lesion is present.

In a case recently seen the patient had a fall from a horse, with apparently a bad sprain of the wrist. The subsidence of the swelling showed a slight deformity and a persistent tenderness that led to the suspicion of a more serious injury. When referred for the Roentgen diagnosis an impacted colles fracture was found, with a comminution of the lower fragment and an additional fracture of the styloid of the ulna. In a second case the patient made a misstep from a boardwalk, of but a few inches. The sprain was found to be complicated by a fracture of the neck of the fifth metatarsal bone.

A stout lady fell, striking upon her shoulder. The injury seemed too serious for a simple contusion, but a fracture could not be definitely determined except by the Roentgen examination. This showed a fracture through the anatomical neck of the humerus, with a splitting off of the greater tuberosity.

Such instances, and others with less marked symptoms, might be multiplied. They have become so numerous that the dictum, as announced by Sir William Bennett, that it is essential to have all cases of sprain examined by the Roentgen method as routine practice, has become a rule.

The surgical consultant who believes that he can exclude fracture, in injuries involving the joints, without the aid of the Roentgen method is becom- rare, since the majority of them have already been found wanting by its

The conscientious surgeon recognizes the accuracy of this method, its

value to his patient, and that all reasonable means and care can not be said to have been employed without its routine employment.

The orthopædic surgeon has found it of invaluable assistance. It has assisted him not only in differentiating malformations complicating dislocations from simple dislocations and dislocations resulting from joint disease, but it has also enabled him to classify the congenital malformations and recognize them in every case, so that treatment appropriate to each can be employed. He recognizes by its aid the defects or efficiency of corrective measures and apparatus which he has employed, and thus has under control the corrective elements during the progress of repair.

A case in point has already been examined: a congenital luxation of the hip where a Lorenz operation was to be performed. The Roentgenogram showed that the luxation was complicated by a coxa valga deformity of the head of the femur, and also that an attempt had been made by nature to form a new acetabulum. The operation was successfully performed, and a subsequent Roentgenogram showed the head of the bone lodged in the new acetabulum.

The employment of this method of diagnosis in orthopædic surgery has led to the detection of obscure diseases in joints which were considered to be synarthroses with little functional action. The resulting wider study from the anatomical and clinical standpoint has shown that they possess greater physiological movements than had been supposed, while, since their pathology has become better known, they have been more frequently recognized.

Sarcoiliac disease was seldom recognized, and then only in the very late stages, before this method was applied to the study of this synchondrosis. The absorption of cartilage and bone necrosis can now be recognized in the earlier stages, thus localizing the disease at a time when treatment is more efficient and repair possible.

A young married woman recently came under observation, having a group of neuralgia and rheumatism symptoms that had led to very varying diagnoses and extended courses of treatment. She was sent for examination for suspected renal disease. The Roentgenogram showed the absence of calculi and suggested the possibility of sarcoiliac disease. This suspicion was confirmed by an examination directed to these joints. The application of a suitable brace resulted in the gradual relief of all symptoms and the apparent cure of a condition that had become chronic because an accurate diagnosis could not be made by other methods.

There are varying forms of systemic disease which express themselves in arthritic lesions that in the early stages seem alike, but later develop very

diverse characteristics. They have been roughly classified as gouty and rheumatic, and more recently have been divided into groups depending upon their etiology or rather the systemic causal factor. Thus, gouty, rheumatic, and toxic forms have been described as occurring in sthenic or asthenic patients and resulting in atrophic and hypertrophic changes. These subdivisions are in a measure accurate, but the differentiation of one group from the other was not possible until the changes became so marked as to render effective treatment difficult.

The arthritic manifestations are, in general, earliest seen in the smaller joints, and can be readily detected in the phalangeal articulations by the Roentgen examination. The Roentgenogram shows most clearly, on comparison, the difference between the normal joint and the atrophic disease with the absorption of cartilage and the approximation of bones. On the other hand, the deposits about the joint in the hypertrophic variety are readily distinguished, and thus an early differentiation can be made with the aid of this method, which results in treatments diametrically opposed in effect, according to the diagnosis established, the asthenic varieties demanding, besides the correction of the toxin-producing derangement, a stimulation of metabolism and building up, while the sthenic form demands a regulation of diet, cutting down the uric-acid-producing foods.

To these forms of arthritis, due to systemic intoxications, might be added the lesions of tuberculosis, when the early recognition of cartilage absorption or commencing bone necrosis leads to the institution of proper treatment which is most efficient.

It is therefore evident that the field in which Roentgen diagnosis is valuable has been greatly increased, while the accuracy and detail obtainable are better understood and the pathologic findings are translatable with greater exactness.

These earlier and more accurate diagnoses result in more effective treatment, with less deformity and an earlier cure. The best interests of every patient having a joint lesion demand this examination, and, as Sir William Bennett rightly said, "It should indeed be an accepted practice, that when possible, every sprain, especially those near joints, should be examined by the x-ray." The neglect of these apparently trivial injuries often results in serious deformity and loss of function that is very valuable, especially to those dependent upon their limbs for their labor. The failure to employ this accurate method of diagnosis for the benefit of the patient has been construed as a neglect to employ the ordinary and usual means in the diagnosis and treatment of injuries; and where there is the least doubt, it is the duty of every

practitioner to see that his patient receives the benefit of this accuracy in diagnosis. This method enables the practitioner to know, and not to only think, that a fracture is or is not present as a complication.

112 South Twentieth Street.

INGESTION TUBERCULOSIS.

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In 1901, Koch, whose immortal discovery of the tubercle bacillus stamped with unusual authority any view he might set forth, startled the medical world by his belief, expressed before an International Congress held in London, that bovine and human tuberculosis are practically distinct and reciprocally incommunicable diseases. A commission was at once appointed which made exhaustive investigations on this subject, so important of settlement; and this body made an *ad interim* report to the effect that the great German was mistaken in his position.

A second "British Royal Commission," appointed on January 19th of this year, quite confirms the first report, made two years ago. This latter body continues to find that undoubtedly a certain number of cases in the human subject, especially in infancy and early childhood, are the direct result of the introduction into the human body of the bacillus of bovine tuberculosis. It is also unquestionable that in a majority of these cases this bacillus is introduced through cow's milk, which is, under such circumstances, clearly causative; and a very large amount of disease and many deaths, especially among the very young, must be attributed to this source. Here is reinforced the now familiar view of von Behring, which is objectionable only to the extent that this observer declares all tuberculosis to be due to the milk of cattle, a declaration which the reflecting physician must conclude to be unscientific, in that it is much too sweeping.

The commission finds that bacilli can be detected in cow's milk, though with some difficulty; but there is very little difficulty in recognizing, by means of the tuberculin test, that a cow is distinctly tuberculous—and the milk of such an one should never be used as food.

The commission were able, both by feeding and by inoculation with bovine tubercle bacilli, to produce the disease in apes. And here is cer-

tainly an important consideration. We may easily prove that the bacillus of the human type will produce tuberculosis in the lower animals; and this has been done many times and beyond peradventure. But to prove the converse is not so easy, for obvious reasons. Darwinism, however, certainly helps us here, as Saleeby[1] has brilliantly pointed out. There are a whole series of diseases which are common to man and the anthropoid apes, but which attack no other animal. Metchnikoff and his colleagues at the Pasteur Institute have proven this, and also that protective and curative sera can be produced in this fashion. There is certainly a profound resemblance in the bodily chemistry—a physiological similarity no less striking than the anatomical resemblances so evident of man and these "primates."

Again, we have learned that the blood of each species of animal differs radically from that of every other. The expert in murder trials has hardly been able to decide whether blood specimens submitted to him are human or not. Mammalian blood could be distinguished from that of other animals, by means of the characteristic shape of the corpuscles which is common to all mammals save the camel; but to distinguish between the blood of a man and a dog were a difficulty which certainly could not meet the most superficial cross-examination. But now it has been shown that when the blood, say of a dog, is injected into the blood-vessels of another family of animal, such as a cat, the erythrocytes are destroyed and disintegrated; whereas, if the dog's blood be injected into another dog, no such disintegration occurs. Hence to distinguish between human and canine blood, one need only make a sterile solution of the blood-stain and inject it into the dog. If hæmolysis occurs the blood cannot be canine; it it does not, the blood must certainly be dog's blood. Now, the bizarre and somewhat humiliating fact is that the blood of the anthropoid ape gives the characteristic human reaction, while that of the lower monkeys does not. We may fairly assume, because of these similarities in pathology, in embryology, and in physiological chemistry, that when anthropoid apes become tuberculous after inoculation with the bovine bacillus, the same fate is possible for the human subject.

To return to the commissioners: They found that tuberculosis occurs in many, if not all, domesticated animals, certainly in the ox, the hog, the horse, sheep, cat, and dog. It has also been observed in many wild animals when kept in captivity. There is an avian tuberculosis; and even cold-blooded reptiles are sufferers.

Ravenel adds to these creatures, donkeys, goats, rabbits, and, of course, guinea-pigs. This worker has found no single animal more susceptible to the

[1] Evolution, The Master Key, p. 136, Harpers.

human than to the bovine tubercle bacillus; and he finds the latter to be of greater virulence than the human organism. His classic experiment is very conclusive: he fed butter laden with human bacilli to animals found healthy by the tuberculin test; and having killed them shortly after this meal, found bacilli in the chyme in the thoracic duct, although the intestinal tract showed no evidence of tubercular infection.

Another very weighty communication concerning ingestion tuberculosis is that of Schroeder and Cotton on "The Relation of Tuberculous Lesions to the Mode of Infection."[2] These investigators, having selected three hogs and two cattle, which were previously ascertained to be non-tuberculous by the tuberculin test, injected subcutaneously into the tail as near the tip as possible, virulent tubercle bacilli. They concluded, from such investigations as these, that the ingestion of tubercle bacilli is the real method by which tuberculous infection reaches the lung, as well as other organs and tissues, and that such infection may pass from one part of the body to another remote to it without leaving a chain of lesions to mark its path.

One need make no doubt whatever of the correctness of these findings, they are corroborated in thoroughly adequate abundance by scores of other workers. But the further statement of Schroeder and Cotton, that "systematic investigation is gradually retiring the inhalation theory that has long been used to explain the frequency with which tuberculosis is a pulmonary disease" is subject to serious criticism. Nor, while fresh tuberculous material has unquestionably "the highest significence," one cannot at all agree that such material when dried and pulverized has "a doubtful significance." These latter statements are unfortunate (considering the issues involved), in that they are extreme and immoderate, and therefore unscientific. The limits of the pendulum are much too characteristic of professional opinions. Evidently a great deal of tubercular infection has its atrium in the digestive tract, proceeding by way of the lacteals, the thoracic duct, the vena cava, the right heart, and thus to the lung parenchyma; and here the tissues and milk of tuberculous cattle do certainly stand in a causative relation. But one should not forget the many sound observations proving that tuberculosis is contracted in other ways than by ingestion—those patient workers during many years past knew what they were about. Tubercle bacilli have certainly been found potent and virulent in dust after many months; and as the advanced consumptive has been shown to spit out several billions of them in twenty-four hours, it were much worse than unreasonable to neglect this

[2] United States Department of Agriculture, Bureau of Animal Industry, Bulletin No. 93.

source of infection. And we know quite too much about "lung blocks" and like bacillus-ridden enclosures, which are beyond any doubt a most prolific center of tuberculosis propagation, to renounce absolutely the inhalation theory in favor of that of ingestion, or of any other exclusively. Nor is inhalation infection any the less real simply because the aveoli may not be primarily invaded; here the path is probably, in most cases, by means of the bronchial and cervical glands and those of the nasopharynx and the upper air-passages, thence by way of the thoracic duct, to the air vesicles, as in the ingestion type.

Nevertheless, ingestion tuberculosis is now being recognized by all as a very grave matter, which must surely, in the near future, engage the close attention not only of the physician, but of the humanitarian and the statesman as well. From 25 to 40 per cent. of our cattle are tuberculous; the British Commission find from 25 to 30 per cent. of the milch cattle in England to be affected in the same way. In some herds more than 70 per cent. are found tuberculous. The problem then is, what to do with this enormous percentage of diseased cattle; and it is to a large degree an economic problem, in which property values demand consideration. Cornet has therefore wisely differentiated as follows:—

All meats should be rejected as dangerous to health, and useful only for manufacturing purposes, if the meat itself appears diseased, if the bones contain pearly nodules, or if the disease is general and severe, involving more than one of the body cavities and being associated with much emaciation. Such meat should not be used either fresh or cooked, or eaten by either men or animals.

If the disease involves two of the body cavities, but without necessitating the assumption of a dissemination by means of the greater circulation—if, moreover, there is no emaciation and the meat appears to be sound, it may be designated as of inferior quality, but not dangerous to health. Such meat is sold only after having been cooked in a steam chamber, cut up into pieces weighing not more than five kilogrammes, for thirty minutes, at 100° C.

If the tuberculosis is confined to only one of the body cavities, or to a single organ, so that dissemination by the greater circulation may be excluded, the meat is to be considered neither detrimental to health nor of inferior quality; and such meat may be freely offered for sale after elimination of the diseased portions.

The point then is, that the organs of tuberculous animals are chiefly affected, and should not be eaten at all; whereas, their musculature, the portion affected only when the animal is manifestly in advanced tuberculosis,

may, when thoroughly cooked, be sold as food—at least until economic and legislative conditions reach the point that our herds can be made comparatively free of the disease. But the meat of such animals must not be eaten uncooked—nor the expressed juices, nor raw milk, butter, and cheese derived from them.

The subject of governmental regulation of our milk supplies is now under earnest discussion; pending a settlement of this vexed question, Pasteurization of all unguaranteed milk (heating for twenty minutes at 165° F.) should be a routine domestic function.

ON CERTAIN ASPECTS OF THE TOBACCO QUESTION.[1]

By MATTHEW WOODS, M.D.

It is difficult for a man to write about tobacco with perfect freedom, because of fear of impinging upon the susceptibilities of the many, addicted to and unconsciously hurt by its use.

We are free from adverse criticism and charges of eccentricities of thought, when discussing the harm wrought by the habitual use of opium, chloral, cocaine, morphia, alcohol, or other narcotics, because the people given over to these are in the enfeebled minority, their deterioration self-evident, visible as it were to the naked eye; but when we talk of the evil effects of tobacco, especially the ulterior moral and psychic, rather than physical changes frequently resulting from its use, we encounter the opposition of the vast multitude lulled into pseudo-content or elated into artificial states of morbid superiority and indifference by the very medium we condemn.

And yet, as conservators of public health, if we sound the note of warning at all, it must be in this dangerous direction, since the drug has no *beneficial* use in any medical sense, making it necessary or proper for us to recommend it. Indeed, so worse than useless is it now known to be as a therapeutic agent, that after repeated trials and decades of forbearance, it has at last been ignominiously expelled from the pharmacopœiæ of every civilized land.

It does not aid digestion. It does not "prevent lean people from getting too stout" or "stout people from getting too lean." It has no "power to preserve the teeth from decay" or to "neutralize the poison of contagion." It

[1] See my article entitled "Some of the Minor Immoralities of the Tobacco Habit," read at the New England Supper given by the Philadelphia Society of the Alumni of the Medical Department of the University of Pennsylvania and printed in the Journal of the American Medical Association, January, 1902.

is not "a disinfectant." It does not "enable the student to pursue his studies with safety in the dissecting-room because of some 'mysterious power' it exhibits over the morbific odors and vapors of the dead-house" as a recent writer has asserted. It is not "a remedy for asthma, or indigestion, or any other pathologic condition." And, indeed, it may be safe to say that it does not do any one of the hundred and one harmlessly beneficent things it is popularly supposed to do, while we positively know that it does at times produce outright, serious disturbances of the heart, nervous system, and mucous membranes, while its use on the part of the patient also limits and diminishes possibilities of recovery in many other diseases.

It does, however, according to the Dispensatory, "when moderately taken, quiet restlessness, calm mental and corporeal inquietude, and produces a state of general languor or repose which has great charms for those habituated to the impression."

To employ tobacco, though, as thus suggested, would be like treating the mere *symptoms*—mental and corporeal inquietude—with a narcotic, that is to say, deadening the *result* of the disease while leaving the cause untouched; a procedure, from the medical viewpoint, generally unjustifiable.

How much better it would be to track the remote origin of these monsters of unrest to their lair and destroy them, for a man whose abnormal condition, periodically or constantly, demands for its amelioration the soporific and lethal effect of a narcotic, whether it be tobacco, opium, or any other, is a man rather who needs a physician to cure him of the pathologic state that thus demands constant drugging.

This is one of the reasons why the tobacco habit is such an inconsistency especially on the part of medical men.

In the other property of the poison, the production of "repose and languor," lies one of its chief dangers, for in this way it is, that, like morphia, chloral, and other elicitors of narcosis, it gives the user tranquil escape from difficulties and responsibilities that ought to be corrected in some other way. It is easy for a man with a pipe in his mouth to shift his responsibilities to his wife.

The same authority says that "it is a powerful sedative poison, which is locally irritant. In large quantities it gives rise to confusion of the head, vertigo, stupor, faintness, nausea, and general depression of the nervous and circulatory functions." And further,

"When employed in excess, it enfeebles digestion, produces emaciation and general debility, and lays the foundation of serious nervous disorders."

"Amauroses and color-blindness are occasionally produced by it, and even insanity has been ascribed to chronic tobacco-poisoning."

"In many cases of nervous break-down attributed to overwork, the excessive use of tobacco has certainly been an important etiological factor."

So much for its evil physical effects, and the deterioration it works upon the functions that make for health, as recorded in our national therapeutic standard, the United States Dispensatory.

There are other injuries, however, inflicted upon the victim of the tobacco habit, especially during adolescence, that have not been sufficiently emphasized by medical and educational writers; and yet these work greater harm to the race than those that have to do with mere physical well-being. We have reference to the debauched state of mind, alterations of standards of rectitude and chastity, the effect that the use of tobacco has upon the morals of growing boys and young men, and evidently also upon those engaged in the business as manufacturers; as is indicated by the fact that tobacco is the only traffic that almost universally uses obscenity as a means of furthering the sale of its wares.

The suggestive and salacious picture is a part of its stock in trade, almost everywhere and in every land. It seems to be inseparably connected with the business as with no other, for you would hardly expect your grocer or baker to conceal pictures of strumpets in tights and otherwise suggestively attired, in your Saturday groceries or among your morning rolls; and I am sure you would be justly indignant if you found that every time your laundry man returned your linen he inserted a naked Sapho, or Salome, or other specimen of erotic nudity in the bosom of your shirt or up its sleeve; and yet this is what the tobacco merchant does when he sends his wares to your sons and mine even when they are mere boys, and he does it, too, with comparative immunity and without effective protest. This moral obtuseness or indifference is one of the peculiar effects that tobacco seems to have upon people and that is not sufficiently emphasized by medical books and by educators; but, indeed, some educators themselves, in these days, are so vitiated by excessive indulgence in the drug,—so continuously in a condition of tobacco narcosis,—that they have even been known to invite young men to come and put themselves under the influence of nicotine in their own malodorous rooms and under their own professorial auspices. The pity of it!

Is there a faculty presiding over continence in the untarnished brain of youth, and does this particular drug paralyze or impair it? This is the question to which I would like to attract the attention of the profession in this particular paper. I have been appalled by the revelations made to me in this direction, and may enlarge upon this aspect of the question when I have

more space. "Tobacco! It changes thought into reverie," says Victor Hugo. "It besots the nations," says that prince of observers, Balzac.

Who does not know of some once pure-minded and carefully guarded boy, now anæmic and shattered, the willing slave of tobacco, whose first impure thought came to him in an obscene picture contained in a package of cigarettes, and sent by these traffickers unsolicited? They know the relation the one bears to the other and take advantage of it—and when his will was weakened and his sense of moral discrimination clouded by the poison it contained, the rest was easy, for, when once fallen from grace, every additional tobacco purchase induced repeated indulgence. The soporific calm and obscene picture are hand and glove.

In our investigations we have learned of scores of young men, utterly depraved, with collections of these suggestive pictures among their chief treasures.

What physician of experience has not encountered mere lads suffering and ruined by venereal diseases, whose first impulse to unchastity was suggested and encouraged by the vile vendor of the tobacco, pictorially adapted to the susceptibility of boys.

Reverence, respect for authority, or social purity seem to a great extent to be banished from the minds of youth addicted to the tobacco vice, and the world is but slowly awakening to the fact that they are kindred vices, for some physiological reason inseparably united. The subject seems too large and important to be discussed in a single paper.

Special Article

EPILEPTIC SEIZURES; THEIR CAUSE AND TREATMENT.

By C. E. de M. SAJOUS, M.D.

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There are certain features of the pathogenesis of epilepsy which the average text-book author unwittingly or intentionally seems invariably to overlook. Besides the usual array of symptoms, diagnostic points, etc., the well-worn and recognized etiological factors: intestinal worms, indigestible foods, cicatrices, dentition, fright, masturbation, alcohol, lead-poisoning, syphilis, uræmia, and that great basket of iniquities, heredity, are doing duty as of old, with tumors, sclerosis, and nuclear degeneration as local lesions. The physician is enjoined to remove the cause if he can, to look to depressants as main-

stays—with the bromides and chloral in the lead—and to think well of asylums and retreats.

The features which seem always to be left by the wayside are peculiar in the sense that, from the standpoint of practice, they exceed all others in importance. In fact, they constitute the *deus ex machina* of the fit, as it were. Literature shows plainly, for instance, that the dominant feature in the pathogenesis of the convulsions is impairment of metabolism, and that the spasmogenic agent is some toxic agent in the blood-stream. Pathological variations of vasomotor action, due more or less to a morbid condition of the blood, have also asserted themselves so strikingly in the production of fits that some observers have been inclined to regard them as the foundation of the whole symptom-complex. Again, destruction of the spasmogenic agent has been urged by some as the only reasonable principle of cure in opposition to the use of bromides and chloral, which tend to increase its formation in the blood-stream.

Why text-book authors do not consider these cardinal features is difficult to understand. It is my purpose, therefore, to review them briefly in the present paper, and to show that, by taking them into account, the chances of recovery might in many cases be enhanced.

As to the presence of toxic wastes, L. Pierce Clark,[1] after a study of 150,000 seizures, concludes that "we must see the principle of pathogenesis in an initial toxin or autointoxication," *i.e.* "an accumulation of waste products." The relationship between the latter and the production of epileptic seizures is further shown by the fact, emphasized by Van Gieson[2] and many others, that the attacks are more frequent when gastro-intestinal disorders, especially those due to overeating and constipation, are present than at other times. Indeed, Herter[3] caused typical tonic and clonic convulsions and death in rabbits in forty-five minutes by injecting the defibrinated blood of an epileptic overfeeder, while blood from an ordinary patient did not produce such effects. Krainsky[4] also provoked characteristic seizures in rabbits in two or three minutes and several recurrences, with blood-serum obtained by cupping from a case in status epilepticus. Ceni[5] found the blood of epileptics poisonous to man also. Thus he ascertained experimentally that "non-epileptic subjects react under injections of hypertoxic serum, and present intoxication phenomena that are analogous to those observed in epileptics, though less intense and unaccompanied with psychic disorders or epileptic attacks."

The effect of such poisons on the *vasomotor mechanism* is quite as evident. The conjunctiva and face of the epileptic from whom Herter obtained the hypertoxic serum referred to, were congested. That this was due to the

action of the poison in his blood is shown by many facts. "Certain drugs, notably absinthe," writes Schäfer,[6] "produce, when injected into the vascular system, convulsive attacks which are scarcely distinguishable from the epileptic fits provoked by stimulation of the cortex cerebri." Now, all such drugs cause a marked rise of the blood-pressure. This may be shown by comparison with a few of the many other spasmogenic drugs. Thus, while absinthe was found to cause intense congestion of all organs examined by Pauly and Bonne,[7] Wood[8] states that "the full dose of strychnine produces a rise of the arterial pressure which is enormously increased during the convulsions." He refers also to the observation of Bezold and Bloebaum, "that when a small dose of atropine is injected into the carotid artery near the vasomotor centers" . . . . "there is an instantaneous rise of blood-pressure"—"a great rise," he subsequently remarks. Cocaine, as shown by von Anrep, causes "convulsive movements of cerebral origin" which "are arrested by section of the spinal cord." Wood also says: "Certainly the evidence is overwhelming that cocaine directly increases the blood-pressure." The fits caused by this drug are precisely those of epilepsy; the syndrome is known, in fact, as "cocaine epilepsy."

In typical epilepsy the participation of the vasomotor mechanism is none the less marked. Spitzka, over twenty-five years ago (1881), attributed the epileptic seizures to the "explosive activity of an unduly irritable vasomotor center," and most neurologists regard epilepsy as "a functional vasomotor disease." The blood-pressure is not only high, as observed by François-Franck and Pitres, but the speed of the blood-stream in muscular vessels, according to Leonard Hill,[9] is from three to five times greater than usual—an index of the violence of the cortical circulation. Indeed, Weber[10] found vascular lesions and extravasations in the cortex and medulla of cases of status epilepticus, so great was the force which urged the blood into the capillaries. Onuf even found, besides the capillary changes, tortuosity and aneurysmal dilatations. Victor Horsley[11] has emphasized the importance of congestion of the cortical mantle in the production of epileptic seizures. Ito[12] caused them in guinea-pigs by producing traumatic hyperæmia of the cortex.

We thus have, as cause of the convulsions, a toxic in the blood capable of producing a high vascular tension, and thereby excessive hyperæmia of the cortex. This hyperæmia is a recognized cause of epileptic seizures; in fact, as shown by Prus,[13] even electrical excitation of the cortex cannot provoke fits after it has been anæsthetized by a local application of cocaine. This is not intended to mean that a high vascular tension, due to toxics of internal or external origin, will produce epileptic seizures in every one and any one;

were it so, the many disorders of the gout series would likewise provoke them. What I do mean, is that in all epilepties, *the exciting factor of the seizures themselves,* and irrespective of the condition which renders the subject liable to them, *is a poison formed in the tissues,* and that our chief aim; if we are ever to obtain mastery of the dread disease, should be to destroy that poison and prevent its formation. Is it by saturating the system with bromides—which lower oxidation—that this can be accomplished? Such treatment ignores Nature's danger-signals, and gives the spasmogenic poison free sway.

What are the weapons at our disposal that are capable of causing the destruction of these poisons and of preventing their formation?

(To be continued in our next.)

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Editorial

WHEN ARE ROENTGEN RAY TREATMENTS VALUABLE?

Sufficient clinical experience has been gained in Roentgen ray therapy for profitable retrospection. Why are the reported results so variable? Is there a reasonable explanation? What is essential in technic that will produce uniform results? When is Roentgen ray therapy valuable?

The potency and complex character of the Roentgen rays must be appreciated before the necessity for accurate technic can be fully understood. The rays are often spoken of as if produced according to U. S. P. standards, and as if they could be standardized and as readily tested and measured as the drugs it sanctions. There are, however, no such standards for the application of heat, which varies as widely in its physiologic actions with its degree and quantity. The rays are physical agents, producing physiologic actions

that vary widely with the quality, quantity, and method of application. Their potency is as great as that of strychnia or digitalis. They are as variable in their effects, according to the strength and frequency of the dose. There is as much need for full physiologic action where it is demanded; as much necessity for care and accuracy in administration. Their penetrating power brings their physiologic action to bear upon the cells of the body, wherever they are situated, the action depending for its effect upon the amount absorbed by the tissues. Their effect upon metabolism has been determined, by careful laboratory tests, to often be more than double the metabolic output.

Such a powerful agent demands careful study and great care in its employment, to guard against untoward effects and to produce valuable physiologic action. The method of producing and estimating the amount of the various qualities and quantities must be understood and their effects and application appreciated by wide clinical experience.

If there is one mistaken idea that will account for all the failures, it is that a technic can be acquired for therapeutic work with this agent, that will be successful for therapy, but incapable of doing difficult diagnostic work. The man who says he can use the Roentgen rays for therapeutic work, but can't do difficult work in diagnosis, might just as well buy a Leucodescent lamp; he may not do so much good, but he can't do so much harm. If he has not tested his technic by the photo-chemic test of Roentgen diagnosis in difficult cases, he can not accurately estimate or measure the qualities and quantities of the rays he is attempting to employ. If he has not failed in making difficult Roentgen diagnoses and learned why; if he has not detected the errors in his technic by his failures in diagnosis and learned to correct them, he can not recognize them in therapy and will only see his failures. It is better to spoil photographic plates than patients in acquiring technic.

Many have been deluded and persuaded into buying apparatus for therapeutic purposes only. They have not applied the photochemic test of the efficiency of either apparatus or technic. They have failed to produce satisfactory results, because no one could produce them with such apparatus or acquire with it efficient technic. They have blamed the method and this therapeutic force because "pressing the button" did not produce physiologic action of sufficient strength to influence any pathologic process.

That the Roentgen rays are powerful stimuli of all metabolism is undoubtedly demonstrated by clinical and laboratory experience. That they act upon cells with which they come in contact in proportion to the vitality of the cell and to the amount of rays absorbed is also proved. The line of demarcation is sharply defined between areas protected and those exposed to the rays, those

near and those further removed from their source. The lymphoid tissues, possessing but little cellular vitality, are easily affected, a valuable result where metastasis is to be feared.

To be most effective, the requisite quality of ray to be employed is that which will be absorbed in the pathologic cells under treatment. When this quality in sufficient quantity has been absorbed, the pathologic cells are destroyed and replaced by normal cells of higher vitality. Such effects and changes have been demonstrated in clinical experience and by microscopic examination both in superficial and deep-seated tissues.

The adaptation of the quality of the rays to the character and location of the pathologic tissue is essential to effective treatment. The rays must be absorbed in the tissues, and not pass through. Their physiologic action is proportionate to the amount absorbed. The rays vary in penetrating power and absorbability under certain changeable physical conditions. That is, although all the varying qualities are probably produced all the time, the preponderant quality is always dependent upon certain well-known physical conditions, that are recognizable as a guide. The therapeutist must be able to produce and recognize the necessary quality to reach and be absorbed in the tissue he is treating. The more accurately he adjusts the quality, the more effective will be the treatment and the sooner will the essential quantity be absorbed. He must have clinical experience to know what quality and quantity to employ. The estimation and adaptation of the necessary quantity is essential in the massive dosage called for by full physiologic effects, as in malignant disease. Mild, timid doses would stimulate.

Agents that can stimulate to renewed activity, or overstimulate and destroy, according to their amount, are common in therapy. Such an agent must always be employed to produce a particular physiologic action by accurate dosage, or more harm than good will result. The limit of toleration must be reached to produce full physiologic effects when they are necessary.

It is evident that a comprehensive technic is essential to success—that a technic for therapeutic uses only is at least defective and acquired by failures in treating patients. If the therapeutist with the Roentgen rays can not do difficult work with them, his technic is defective and he is incapable of recognizing the qualities and quantities demanded by successful therapy. In addition, he must possess sufficient clinical experience to determine what quality will be effective in treating the lesion in hand; in what quantity to employ it; how frequently, and when he has produced the desired physiologic action.

It is only when Roentgen therapy is used with such a flexible technic and a reasonable degree of accuracy that it can be valuable. The results will be

dependent and proportionate to the therapeutist's expertness and judgment in technic and advance in clinical experience. Too much has been expected of young men lacking in clinical experience. Those who have demanded of them diagnosis or therapeutic results out of proportion to their special technical and clinical experience are alone to be blamed for the results produced. This agent can not be held responsible for the failures due to its method of employment. The same results are not expected from the general practitioner and the therapeutic consultant. The clinical experience of the therapeutist is an essential to success with this as with other remedies, the beneficial results being often proportionate to the clinical experience and acumen of the therapeutist.

CHARLES LESTER LEONARD.

REMARKS ON MEDICAL LEGISLATION.

The people exhibit many phases of misapprehension on the subject of legislation designed to define, limit, and regulate the prerogatives of those who shall practice the art of healing. Derogatory comments are freely offered on all sides; the daily press frequently breaks forth in fulminating condemnations which, too often, betray utter ignorance of the facts, and especially of the principles involved. One delusion appears frequently in most execrative utterances, viz., that some clique or ring are striving to advantage themselves at the expense of others. Persecution is constantly hinted when recommendations are made in legislative bills to place restrictions on the freedom of action of unorganized, relatively irresponsible, cults or *"pathies."*

The regular practice of medicine, whose sphere of usefulness is universal, is only bounded in its search for truth by the divine laws on the one hand, and individual limitations on the other. No one more frankly admits his shortcomings, his imperfections, his finiteness, than the regular physician. On the other hand, no one is more bold, more comprehensive in his claim to do all things well, to be especially endowed with omniscience and omnipotence, than the apostles of new, raw, untried beliefs or panaceal measures. Such swaggering assumption of capacity, of control over the complex processes of nature, strikes at the basic integrity of economics.

The people, especially the American people, delight to exercise their constitutional right of freedom of thought and speech to assail the sincerity of purpose, the unselfish protective efforts of the regular profession of medicine. In private conversations, in public utterances, there is an obvious, a disgustingly obtrusive tendency to sneer at, to misquote, our statements; to misap-

prehend and condemn our attempts at municipal or State enactments; to shriek "persecution," "graft," and the like ill-considered splutterings of ignorance and malice. We are taught by the powers residing behind the daily press that it is their God-given or divinely assumed function to spread the truth, to make known the facts, to define and emphasize those principles which make for enlightenment. Perhaps they do succeed in such departments as those of politics, of general news; but it is altogether otherwise in respect to those under discussion. It would be pertinent here, though space forbids, to relate a personal experience of the writer in a persistent effort, carried on for over a year, to induce the proprietors of certain of the leading dailies in the United States to make editorial provision, whereby medical subjects, news, etc., shall be supervised and at least correctly presented. I will do so later, giving facts and names. My object now is to make plain the truth about the purposes and aims of medical legislation. The whole subject in a nutshell is about as follows:—

State regulation of the practice of medicine is designed wholly and solely for the purpose of protecting the public from the serious perils threatened by irresponsible, self-seeking, insufficiently taught pretenders. Each State is provided with a board of medical examiners, appointed to ascertain the individual fitness of those who desire to exercise the functions, to assume the responsibilities of conservators of individual and public health. They may discharge their duties well or ill, according to their wisdom; but a reasonable familiarity with their work enables me to make the assertion without fear of contradiction, that no body of public servants are confronted with more complex difficulties, or are rewarded with less thanks or appreciation, or are assailed with more unreasoning bitterness. They are paid on the humblest basis and are made the targets of the largest and most varied abuse. Yet, be it remembered, in their hands reposes the chief, almost the only protection against the catastrophies consequent upon the unbridled machinations of quacks, charlatans, nostrum-venders, all those who prey upon the childish ignorance of the citizens of this land of freedom. To be sure, it is an inalienable, constitutional right, enjoyed by each and every one, to go to perdition in whatsoever manner or fashion, by any agency, which seems to them good. We would not for a moment presume to thwart them, if so determined, and after due choice indicated. We must assume the prerogative, and it would seem the right, to hedge the undetermined about with such safeguards as shall serve, if they graciously agree, to defend them from perils made ready for their undoing by conscienceless scoundrels or obsessed fanatics. The Nazarene has drawn the strongest comparison between the good Samaritan

and the discreet, undeniably diplomatic citizen who passes by on the other side. Society is a community banded together, with unwritten and mandatory laws, as well as official enactments, to do the best each one can to give aid and comfort to his fellow, as occasion shall arise. Among the official enactments, the outcome of deliberate thought, free speech, the utmost publicity in debate and legal acumen, are the rulings of the Supreme Court, the various State and municipal statutes, directing what shall be done to enhance opportunities for the continuance of life and physical happiness, so far as can be formulated and enforced. The chief of these are the laws to compel those who desire to take charge of human beings when confused, suffering, whenever physically (and hence inevitably mentally) disordered, and to insist on their conforming to a reasonable standard of fitness. Standardization is demanded in all departments of handicraftmanship which may involve jeopardizing health or life, *e.g.*, captains of sailing or steam craft. Those of the community who are of or about the average intelligence, fully recognize that it is intolerable that mere intelligence, or boldness born of ignorance, shall qualify for control in what may at any moment become a position of peril. Would that worthy gentleman who desires to curtail the legislative powers of the medical profession, contentedly start on a voyage to Europe on a ship captained by one who had, however successfully, run but only a ferry-boat for many years? That captain may do very well in his place, within his training and experience, but he is by no means fit to assume the greater task of transoceanic voyaging.

Or, better simile, how many of these liberal cavillers, filled to the muzzle with "faith," would (would Mother Eddy herself) willingly put to sea in a steamship captained by the most devout Baptist preacher who ever braved the rolling mill-pond tide, but who is utterly unfamiliar with seamanship?

Or, stronger illustration yet, what one of these estimable champions of freedom, if his good property were put in jeopardy by clever fellows of the baser sort, abounding in all communities, standing ready to seize by subtlety that which another holds in generous hands, made slack by inadequate vigilance, but would himself employ the best lawyer he could get? Would he trust his defence in the civil courts to a devout and holy man untrained in the mysteries of the law?

It may be true, it often appears to those of us who have some knowledge of the complexities of bodily derangements, that a man will cheerfully and prayerfully commend his sick wife or child to the tender mercies of a "man of God," or to a bold, insinuating charlatan, and not to a qualified, educated, experienced physician, who practices a form of therapeutics against which it may be he cherishes some conscientious but unexplainable antipathy. Does

not this form of manifest aberration demand legal restraint? Does freedom go as far as to remain compatible with such "constitutional" privilege?

Clearly, among the most conspicuous of our faults is timidity, absence of zeal, in defining, teaching, and defending our rights already formulated. Equally forceful is the emasculating effect we sometimes exert on legislation actual or possible. The thinking physician must not only evolve thoughts on legislation, he must educate the community, and do all in his power to secure protective enactments.

J. MADISON TAYLOR.

Cyclopædia of Current Literature

ALCOHOL, PHYSIOLOGICAL ACTION OF.

The relation of alcohol to living protoplasm is discussed by the author, and he points out that it is a normal product of metabolism of the yeast fungus; that it belongs to the class of substances that are completely metabolized, and is passed out because its existence is destructive to the living cell; in short, that it is an excretion toxic to the organism that produces it. An excretion of this type is also toxic to higher organisms, and this is the case with alcohol. Admitting that it is oxidized in the liver and produces heat, and that it may lead to decrease in the catabolism of carbonaceous foods, the heat produced is not a normal catabolism, but is simply the result of a protective oxidation, which is insufficient, the toxic action showing in its narcotic effects. The decreased metabolism of carbonaceous and nitrogenous foods following the ingestion of a narcotic is a universal fact depending on the drug effect and giving to the oxidized narcotic no significance as a food. It may be said, he says, without reservation, that ethyl alcohol is not a food in the scientific significance of the word. W. S. Hall (Journal of the American Medical Association, February 2, 1907).

APPENDICITIS AND JAUNDICE.

The appearance of icterus during the course of an appendicitis or following an operation for the relief of the latter condition, has probably been observed by the most surgeons, yet but scant notice is taken of this complication in the very voluminous literature on the subject of appendical disease. That the condition is not infrequent is shown by the statistics of Reichel (Zeitschrift für Chirurgie, Bd. 83, Nu. 1), who found that among 165 of his cases of appendicitis jaundice had been noted in 18, and of these, 10 resulted fatally. These mortality figures seem to afford sufficient reason for looking upon this complication as indicating a very unfavorable prognosis. The type of jaundice under consideration is neither catarrhal nor obstructive, but is an indication of a general septic infection, the origin of which must be sought for in the inflamed appendix or its mesentery. Of quite a number of patients operated

upon during the interval, Reichel found jaundice occurring in only one, and here the wound had suppurated.

Icterus, as a complication of appendicitis, usually occurs within from thirty-six to sixty hours after the beginning of the attack, and unless it subsides in a short time, is rapidly succeeded by a condition of restlessness accompanied by a rise in the pulse-rate, but not of the temperature. Reichel compares the clinical picture to that which is found associated with acute iodoform poisoning. In most cases the patients became delirious, then deeply comatose, and death followed in twenty-four hours. The fatal issue can only be ascribed to a severe and virulent septic infection, and this may be unaccompanied by peritonitis. In such cases not even an early operation will avert the unfortunate outcome. Reichel claims that the liver becomes involved by the transmission of masses of bacteria or infectious thrombi through the medium of the portal circulation. It would seem wise, therefore, to restrict all handling of the affected organ during an operation as much as possible, and the writer even urges that after forty-eight hours operative interference be limited to the evacuation of any abscesses which may be present. Editorial (Medical Record, February 9, 1907).

ARTERIOSCLEROSIS.

The writer states that it is common knowledge that arteriosclerosis, as seen in many, may be due to certain poisons, such as those of syphilis, lead, and alcohol. Chronic, diffuse nephritis, too, in young people can produce endarteritis. But the great majority of cases of arteriosclerosis do not fall under these heads, and in them the cause is still undecided. While atheroma and endarteritis tend in their turn to raise the blood-pressure by offering increased resistance, they seem to be often, and perhaps usually, the result of a high pressure antecedent to themselves. Thus the loss of elasticity in the arteries, instead of causing the high pressure, is the result of the same, as is evidenced by the fact that all such arteries are widened before losing their elasticity. It probably requires considerable time for increase of pressure to deprive arteries of their elasticity. When the conditions bringing about the rise in blood-pressure are inquired into, a region of many theories and few facts is entered into. The high pressure is due to increased resistance, which in turn may be due to the disease in the blood-vessels, to increased viscosity of the blood, or to the presence in the blood of toxins, undigested products, extracts of animal tissue, excretory substances, etc.

The first necessity in treatment, if the symptoms are severe, is rest in bed; a good many cases improve under this alone. A certain amount of regulated exercise should be taken daily; the patients should rise early; and if men, they should renounce tobacco. Smoking raises the blood-pressure in man just as certainly as does the injection of nicotine into animals. In some cases severe symptoms are for the time greatly relieved by nitrites. But their effect is usually transient. No drug approaches calomel. Given in small doses of half or one grain every night for a short time, and repeated at intervals, it is often of great value. It is needed for its alterative, not its purgative effect. Alkalies act by increasing the flow of urine.

Diet is more important than habits or drugs; a very light diet often acts like a charm when the cause of the high pressure is the presence of an impurity in the blood. When it is due to permanent changes in the vessels, it is necessary for the blood-flow, and the heart must be strengthened for its task by rest and small doses of digitalis. Meat should not be prohibited; most patients do much better with meat than without it, but the total of their food must be kept at a very moderate level, as their means of disposal of refuse are crippled. This is especially true in cases of chronic nephritis; the blood-pressure will probably not be reduced, because of disease of the abdominal vessels. These vessels have a preponderating effect upon blood-pressure, and are nearly always diseased in chronic nephritis of middle life. The degenerating renal tissue pours a toxin into the circulation which can only be removed by increasing the flow of urine; change of diet has no effect. Chemical analysis of foods has farther to go than the estimation of calories or nitrogenous contents; personal observation often tells far more than chemistry. Carbohydrates and salines have little or no effect upon blood-pressure. W. P. Herringham (British Medical Journal, January 12, 1907).

CARBONIC OXIDE AND ILLUMINATING GAS POISONING.

The writer compares the clinical pictures of poisoning from coal-gas and from illuminating gas, stating that the symptoms of poisoning from illuminating gas show that it is two and a half times as toxic as pure carbonic oxide. The clinical picture of coal-gas poisoning includes coma, dyspnœa merging into commencing asphyxia, and frequent twitchings of the body lasting for minutes. Violent convulsions and tetanus are rare, but there are gradually increasing paralysis of the lungs and asphyxia, the blood in general is cherry-red, the right heart is gorged with black blood, and finally, there is the carbonic oxide spectrum. With illuminating gas, on the other hand, the tendency to coma is less marked, and there is muscular weakness with transient paralysis of the extremities, almost constant general cramps in all cases of a moderate course, with absence of dyspnœa, although convulsive respiratory movements occur with expiration. All the organs, especially the brain and meninges, are gorged with red blood showing evidences of toxic action, and there is emphysema of the lungs in the form of circumscribed alveolar emphysema without œdema. Recent experimental research on dogs and frogs indicates that the toxic action of illuminating gas must be due in part to some factor aside from the carbonic oxide, as it is so much more toxic than pure carbonic oxide alone. T. A. Maass (Berliner klinische Wochenschrift, Bd. xliii, Nu. 50; Journal of the American Medical Association, February 9, 1907).

DIABETES, INTERNAL SECRETIONS IN ORIGIN OF.

The writer reviews the nature and action of internal secretion of the pancreas, thyroid, hypophysis, and suprarenal capsule, coming to the conclusion that the internal secretion of the pancreas plays an important part in the pathogenesis of pancreatic diabetes, owing to its importance as a stimulator of general glycolysis. It is probable, he thinks, that in cases in which the functional activity of the pancreas is reduced from any cause, the reduction in

the amount of its internal secretion is an accessory factor in the production of a diabetes for which other causes are directly responsible. Other secretions probably exert a more or less important action on the carbohydrate metabolism. This has been experimentally established for some of them, but the clinical data are not sufficient to affirm whether or not they intervene in an effective manner as adjuvant causes of diabetes mellitus.

The author has recently announced experimental research demonstrating that the glycosuria observed after injection of suprarenal extract occurs with the same characteristics in dogs that have had their pancreas removed as in normal dogs. His experiments prove the existence of a transient suprarenal glycosuria, and suggest the possibility that abnormal functioning of the suprarenals may aid in the production of diabetes in man. This assumption is not sustained by any clinical data to date, and on account of the large amount of suprarenal extract required to induce it and the way in which the system soon becomes accustomed to it, the assumption, he says, does not seem very probable. The influence on glycolysis displayed by the pancreas is not a special function nor due to special elements, such as the islands of Langerhans; it is merely, he thinks, a functional activity which it shares with other organs. R. Lépine (Deutsches Archiv f. klinische Medizin; Bd. lxxxix, Nu. 1-4; Journal of the American Medical Association, February 9, 1907).

DIPHTHERIA, EPIDEMIC.

From a study of a diphtheria epidemic at the Adirondack Cottage Sanitarium (for incipient pulmonary tuberculosis), the authors conclude that in institutions immunizing doses of antitoxin of 500 units should be given every two weeks for two or three times. Diphtheria may occur in patients two weeks after an immunizing dose of 500 units. It is unnecessary to endeavor to separate individuals with positive cultures from the nose or throat without clinical symptoms, from those with negative cultures when immunization is carried out. One negative culture from the throat is sufficient neither for diagnosis nor for raising quarantine. The advisability of taking cultures from the nose, except in nasal diphtheria, may be questioned.

Careful isolation for three or four weeks under a trustworthy nurse should be practiced. After that time the patient with a positive culture should be kept out of the general dining-room or buildings and at a distance of four feet from all non-diphtheric patients.

Some untoward symptoms, usually slight, appear in most patients. A rash, arthralgia, swelling, and general malaise occur most frequently. Slight transitory rise of temperature occurs frequently.

In institutions where the out-door treatment is rigidly enforced the epidemic will probably be cut short. In the presence of a diphtheria epidemic, patients with pulmonary tuberculosis should be treated, as regards the diphtheria, as otherwise healthy individuals. and when they contract diphtheria they should be moved out of doors as soon as possible. Mild diphtheria seems to exert little or no harmful influence upon the pulmonary lesion in the tuberculous, and antitoxin in small or large doses seems to have little or no effect upon these patients. Immunizing doses may be given to patients with fever.

Complications seem to occur after diphtheria no more often, possibly less, in the tuberculous than in the non-tuberculous. Lawrason Brown, A. H. Allen, and E. J. S. Lupton (American Journal of Medical Sciences, February, 1907).

DISINFECTANTS AND DISINFECTION.

The subject of disinfection of apartments after contagious diseases is considered by the writer. He finds that of the three agencies he used, gaseous disinfectants, heat, and liquid solutions, the former comes first, and that formaldehyde is best for general use. Sulphur and hydrocyanic acid are more efficient only when vermin such as cockroaches, bedbugs, fleas, mosquitoes, etc.. are to be dealt with. The things to be considered in using formaldehyde are: the amount employed, which should not be less than a pint of 40 per cent. solution for every 1000 cubic feet of space if anything more than surface disinfection is desired. The gas should be evaporated as rapidly and in as concentrated form as possible. Temperature should be at least 70° F. if possible, and better if higher. Disinfection is unreliable if below 53° F. The atmosphere should contain considerable moisture. Disinfection should last from twelve to twenty-four hours in most cases. Leakage of gas from the room should be prevented.

The best method of using formaldehyde, in the author's opinion, is by adding to the 40 per cent. solution some chemical agent, like permanganate of potash. About 20 ounces of formaldehyde should be used for every 1000 cubic feet of space disinfected, together with 8½ ounces of permanganate of potash. The vessel should be slightly heated, and the floor protected against splashing over during effervescence. Permanganate of potash is placed first in the vessel and the formaldehyde poured over it. If the gaseous disinfection is done with sufficient thoroughness, the author sees no need of a later use of a liquid disinfectant. In purely local infections, however, when general fumigation is not required, liquid disinfectants are of use. Carbolic acid, some of the coal-tar preparations, and bichloride-of-mercury solution are the best. Formaldehyde is not to be recommended as a liquid disinfectant. H. Albert (Journal of the American Medical Association, February 2, 1907).

DUODENAL ULCER AND GALL-STONES, DIAGNOSIS BETWEEN.

In cholecystitis the pain is sudden and severe, usually has a wide field of radiation, comes with no regularity as to time, is rarely caused by food and as rarely eased by it, nor does the patient often trace his distress to it. There is no stomach history between the short, sharp attacks; spasm of the diaphragm with dyspnœa is common, vomiting and gas, if present, are so only during the colic, and the relief from eructation and vomiting is not so marked as in ulcer. Nausea and intense retching may be followed by vomiting of a small amount of thin, yellowish, bitter liquid mixed with mucus.

In duodenal ulcer pain comes in periods of attack lasting for days or weeks, is often sudden, may be severe, yet usually not that intense type of pain met in gall-stones, but rather gnawing and burning in character. It may be irregular as to time of the separate attacks, but regular during the period of the stomach disturbance. The pain is clearly related to food, the intensity often modified by kind and quantity

taken. Food eases for a time, the pain returning from two to four hours later. Hot drinks, soda, and irrigation give relief. Spasm of diaphragm is rarely seen except in some cases of perforation.

The chronic gall-stone case, with impacted stone, ulceration, and adhesions, in which no jaundice appears and the stomach symptoms, as gas, vomiting, burning distress, sour eructation, impaired appetite, and dilatation, predominate, and the pain is moderate and follows food, will too often be diagnosticated ulcer; while the duodenal case, in whose early history only irregular attacks of sudden, sharp, intense pain of peritonitis or acute spasm (and with no obstruction or hyperacidity) can be elicited, and there is no gas, vomiting, or sour eructations, will as surely be mistaken for gall-stones. Christopher Graham (Journal of the American Medical Association, February 9, 1907).

EPILEPSY IN THE INSANE, STRONTIUM BROMIDE IN TREATMENT OF.

Judging from the writer's experience, strontium bromide, as a rule, acts better in controlling the number and severity of the fits than the mixed bromides of sodium and potassium. Strontium bromide rarely causes depression, and rashes remained absent in all the writer's cases. This remedy, in the author's opinion, acted best and most consistently on the female patients, in all of whom the action, as regards controlling the fits, was superior to that of the mixed bromides. The maniacal symptoms of the male patients while taking strontium bromide were not influenced to any perceptible degree. The mental condition of the female patients appeared to improve. Considering the severity of the type of epilepsy on which the author's observations with this drug were made, there seem to be reasonable grounds for supposing that, with a milder form of epilepsy than is usually met with in an asylum, an even greater benefit would be derived from the administration of this drug. J. M. Bennion (Lancet, January 5, 1907).

FRACTURES, TREATMENT OF.

In considering the treatment of recent fractures, various points must be borne in mind: the reduction of the fracture, the retention of the fragments in position and their proper fixation, and the avoidance of secondary troubles, such as deformity and inability to use the limb completely. Of these various points the proper reduction of the fracture is of paramount importance. By reducing is meant an attempt to interlock the broken ends. The ends of the bones are never broken off smoothly; there are always projecting portions on both surfaces, and if only these can be fitted into each other, the ends will frequently retain their position to a considerable and sufficient extent without much trouble or pressure. Where a fracture extends into a joint, or is in the immediate vicinity of a joint, no pains should be spared to get accurate replacement of the fragments; otherwise there will be a great deal of restriction of movement in the joint, and often complete stiffness, owing to the altered lines of the joint-surfaces.

The chief obstacles to reduction are muscular contraction and the interposition of materials, such as fascia, periosteum, etc., between the ends of the bones. Other obstacles are rotation of the fragments, comminution of the broken ends, the small size of one of the fragments, etc. The chief difficulty in retaining fragments in position are incomplete reduction of the broken ends,

the weight of the lower part of the limb, and where one fragment is short and has a strong muscle attached to it.

In the great majority of fractures reduction should be effected under an anæsthetic, as complete relaxation of the muscles is most important. Should it be found impossible to get the bones into accurate apposition, the question of apposition should be considered. But it should always be borne in mind that operations of this kind are of a severe and serious nature, especially in the case of deep-seated or double bones. Much depends upon the manner of fixation employed. Wherever the parts are large enough to permit of it. the writer uses an aluminum plate, embracing the two fragments and fastened on with tacks and small screws.

While it is evident that the sooner movements and massage can be begun, the quicker will the function of the limb be restored, yet the author believes that the fractured ends ought to be left quite still for eight or ten days after the injury, except in the case of fractures of the forearm, where the fingers can be left out and moved from the first. W. W. Cheyne (British Medical Journal, January 5, 1907).

GONOCOCCIC CONJUNCTIVITIS, TREATMENT OF.

In gonococcic conjunctivitis of adults, the writer considers that neither protargol nor argyrol is a safe remedy when used by itself; in so far as his own experience is concerned, the writer states that protargol may as well be abandoned; argyrol is useful because it is bland and unirritating and helps to remove the pus, but it has no control over the specific nature of the disease. Thus far at least, there is no better remedy than properly applied solutions of nitrate of silver, which doubtless are more efficient than they were in the past, because argyrol and similar silver compounds may be used as adjuvants.

Many cases of ophthalmia neonatorum are better treated with argyrol for the simple reason that it can do no harm; it acts as well as, and better than, most of the nonspecific remedies. Nitrate of silver may do harm unless it is applied by a skilled hand, but its proper application is required in a certain percentage of cases.

In the treatment of gonococcic conjunctivitis of adults. atropine drops should be used in order to keep the pupil dilated from the very start and to lessen the tendency to hyperæmia of the uveal tract. Internally, the patients should have opiates, if required, and supporting measures if they are depressed and anæmic. G. E. de Schweinitz (Therapeutic Gazette, January 15, 1907).

GONORRHŒAL ARTHRITIS.

The writer believes that gonorrhœal arthritis is by no means always consecutive to specific urethritis, but may develop from the infection in any part of the body. He does not, moreover, accept the statement of certain authorities that rheumatic individuals are more liable to this phase of gonorrhœa, except in so far as a general lessened resistance may make them so. The two diseases are absolutely independent of each other. No joint in the body is exempt, but in the author's experience the left knee has been the one most frequently involved. The disease is in most cases readily distinguishable from articular rheumatism, but there may be more difficulty in differentiating some of the chronic cases from tuberculous arthritis. In the latter, however, the

involvement of the joints is less apt to be multiple, they are less painful and swollen as a rule, and the trouble usually dates from some injury instead of from a gonorrhœal infection. There is usually a tuberculous tendency. The prognosis of gonorrhœal arthritis is always uncertain; the infection is often latent, especially in the glandular type, permanent ankylosis is liable to result, and if the heart becomes involved it is always of grave prognostic import.

Treatment is as varied as it is unsatisfactory. In acute cases the writer advises rest in bed, fixation of the joint by splints to relieve the pain, which may also call for an opiate. Local applications are grateful, and ichthyol ointment, 50 per cent., is recommended early in the case. Salicylates, which are very generally given, do no good, but add to the discomfort by disordering the stomach. In chronic cases, general reconstructives and potassium iodide are useful, and in both forms the cure of the initial lesion as early as possible is advised. The author does not agree with those who condemn surgical measures in this disease, but thinks that they are often of great benefit. Partial strapping of the joint will often give relief; in other cases aspiration and in suppurative cases incision and drainage is the only treatment. Fuller's method of opening and draining the seminal vesicles is noted, and a case is mentioned in which it seemed to be of benefit. J. A. Witherspoon (Journal of the American Medical Association, February 2, 1907).

GONORRHŒAL OPHTHALMIA, PATHOLOGY AND TREATMENT OF.

The striking value of Credé's method in the treatment of gonorrhœal ophthalmia is shown in the figures of large maternity hospitals where it is rigidly enforced. It is hard to apply it in private practice, but fortunately the organic compounds of silver are at our command, which have even more prophylactic value than the nitrate without possessing its irritant properties. In view of the tragic potentialities of the disease, their use should surely be compulsory. The cleansing of a newborn infant's eyes should never be left to the nurse.

Like the urethral affection, the clinical history of gonorrhœal ophthalmia may be divided into the stages of incubation, copious discharge, and ocular gleet. But the incubation period is much shorter, it having been accurately determined to be about sixty hours. There may be a true metastatic or endogenous infection, due in some cases to the presence of the organisms, in others to that of a toxin. In all cases there is a predisposing focus of infection. In adults the disease of the posterior urethra is invariably present, while joint affections are commonly associated. In gonorrhœal iritis there is a well-defined complication, not dependent upon the presence of the microbe in the lesion, invariably associated with posterior urethritis and generally with arthroses.

On the question of remedies, there is an universal admission of the specific value of silver salts. The author relies on the latter, but admits that one serious drawback is the need for their continuous use in serious cases—every half hour, day and night; whereas with the nitrate, three applications a day are usually sufficient. In all adult cases he divides the external canthus, one blade of a pair of strong scissors being pushed under the commissure as far as it will go, and the intervening tissues being severed at a single stroke. This

greatly facilitates proper treatment, the cornea being at once freed from pressure, and articular spasm being done away with. Even more valuable is the free access to the retrotarsal folds. When the swelling has subsided there is very little wound left, and blepharoplasty is not necessary. Although cold dressings are in general use, the writer favors hot applications. When the stage of ocular gleet is reached, the simple astringents are of more use than the antiseptics. W. J. McC. Ettles (Lancet, January 12, 1907).

GRAVES'S DISEASE, HEART IN.

As a result of the study of 14 cases of Graves's disease reported in detail by the writer, he concludes that the most striking feature about the heart in this disease is its extreme sensibility to the effects of muscular fatigue. On the least extra exertion it gives way, and this is shown most markedly in the increase in the transverse clinical diameter of the heart. The increase may only be slight and very transient, but never fails. The right side of the heart is the more readily affected, the auricle being involved in the more severe cases. The degree to which this dilatation proceeds is in direct relation to the general tone of the muscular system; the weaker this is, the more likely the heart will be affected. This ready response of the heart-muscle to signs of fatigue, characteristic of Graves's disease, may be used in differential diagnosis in abortive or masked cases. Accessional dilatation of the ascending aorta and tumultuous pulsation of the peripheral arteries are also useful aids in diagnosis as pointing to Graves's disease. The heart, after this temporary dilatation, almost always returns to its original dimensions. Functional murmurs may appear and last for a time as the result of this cardiac dilatation. Dernini (Riforma medica, October 27, 1906; British Medical Journal, January 26, 1907).

GRIPPE AND PNEUMONIA.

From the writer's observations he concludes that, while grippe appears to be an infectious disease, not all of those who come in direct contact (such as sleeping in the same bed) contract the disease. The possible average period of incubation by air transmission is about seven days. An individual suffering from grippe should be warned against the tendency to develop pneumonia. Proper care should be exercised to destroy all sputa and fomites which may aid in the spread of grippe. Infection of the human system by the bacillus of grippe so lessens the natural immunity, or prepares the soil of man, that subsequent infection by the virulent diplococcus of pneumonia and consequent production of croupous pneumonia may more readily occur. The possible average period of incubation of croupous pneumonia by air transmission is about ten days. A. Woldert (Medical Record, January 5, 1907).

HÆMOCHROMATOSIS WITH DIABETES MELLITUS.

In the final stages of this condition, the writer has observed a triad of symptoms: (1) pigmentation of the viscera, and usually of the skin; (2) hypertrophic cirrhosis of the liver, and occasionally atrophic cirrhosis; (3) diabetes mellitus, which is a terminal feature due to sclerosis of the pancreas causing destruction of the islands of Langerhans and consequent interference with the secretion of the normal glycolytic ferment. Death usually occurs within a

year from the onset of the diabetic symptoms. The majority of writers believe that hæmochromatosis is due to a toxic agent of unknown character and origin, which results in increased destruction of the red blood-cells and deposition of hæmosiderin and hæmofuscin in the body tissues. It is not known whether the changes in the liver and pancreas are due to the deposition of pigment or to the same toxic agent which is supposed to cause the destruction of the blood-cells. The excessive amount of iron in the tissues may be due to defective elimination rather than to increased formation in the blood. T. B. Futcher (American Journal Medical Sciences, January, 1907).

HÆMORRHAGES IN THE GASTROINTESTINAL TRACT, INVISIBLE, TESTS FOR.

From an experience of nearly 1000 examinations of gastric contents and stools, mainly at the Boston City Hospital, the author finds that the guaiac or aloin test for invisible blood is, in spite of exceptions, the most valuable single clinical method recently developed for the recognition of latent cancer and ulcer of the digestive canal, and as a guide in the treatment of peptic cancer. It consists in shaking up 10 cubic centimeters of gastric contents or fæces, rubbed up with a little water, with 3 cubic centimeters of glacial acetic acid, and then extracting with an equal volume of ether by gently shaking back and forth. The tube is then allowed to stand till a clear layer of ether separates; the latter is then poured off and tested for blood by the addition of 10 drops of freshly prepared tincture of guaiac or aloin and 30 drops of hydrogen peroxide or well-ozonized turpentine, the latter preferably when aloin is used.

In the presence of blood the guaiac gives a clear blue color to the mixture. while aloin gives a clear cherry-red. The method is very delicate as well as very simple and practicable, and should be invariably used in conjunction with the other means of physical examination. Its value depends on the care with which other sources of bleeding are excluded. It has most value with the stools, when both positive and negative results are significant. With gastric contents, positive results are often misleading, but negative results are significant. One should never be content with a single test, however much it may agree with previous opinion of the case.

In gastric and duodenal ulcer the chief value of the test is: (*a*) in distinguishing ulcer from a disease of the biliary passages or from a neurosis; (*b*) as a premonitory symptom of severe hæmorrhage; (*c*) as a measure of the results of medical treatment, and as an aid in deciding when surgical measures are indicated; (*d*) in prognosis, in gastric cancer, in diagnosis from anacid gastritis, achylia gastrica, pernicious anæmia and similar conditions, and from chronic gastric ulcer. In general, the test is of great value in discovering or ruling out hæmorrhage in a suspected case. F. W. White (Journal of the American Medical Association, February 9, 1907).

HYOSCINE-MORPHINE-CACTIN ANÆSTHESIA.

The author gives an outline of his results in ninety-two cases in which he had used the hyoscine, morphine, and cactin compound anæsthetic, the patients varying from ten years to eighty-two years of age. He had two deaths,

but they were not due to the anæsthetic.

In three of the cases the number of the respirations dropped to from six to ten. In the others the temperature, pulse, and respiration changed but little from start to finish. Nausea and vomiting have occurred in a few cases; in one quite severe, probably due to the chloroform that was used; in others the symptoms were very slight.

The following are some of the cases in which the hyoscine-morphine-cactin tablets were used: trephining of the skull; removal of tubercular glands of the neck; thyroidectomy; resection of ribs for empyema; intestinal resections, gastroenterostomies; appendicectomies; nephrectomy, hysterectomies; herniotomies; rupture of the bladder; removal of vesical calculi, and several genito-urinary and rectal operations; resection of the head of the femur; amputation of the legs; treatment of fractures, etc., etc. He found that the tablets acted and assisted admirably in the examination, diagnosis, and treatment of fractures, in the allaying of pain after operations—in fact, in any case of severe pain where morphine is indicated, and without the unpleasant effects of the latter. H. O. Walker (American Journal of Clinical Medicine, March, 1907).

INFANTILE CONVULSIONS, ETIOLOGY OF.

From a study of 250 cases of convulsions in infancy and childhood, the writer concludes that they are most frequent during the first year of life, and not very frequent after the third year. The predisposing are more important than the exciting causes, the predisposing causes being "an inherited neurotic taint" and rickets. Healthy children born of healthy parents rarely suffer from convulsions. In children suffering from this symptom, there is frequently a history of ill health or disease in the parents, especially in the mother during pregnancy, and this acts by lowering the vitality of the child and rendering it more liable to disease. The family history of children suffering from convulsions is bad. Frequently the brothers and sisters suffer, and the mortality in these families is high. Only a small proportion of cases can be ascribed to organic disease of the brain or injury at birth. The most common cause in the first two months of life is reflex irritation from the alimentary tract. The great majority of convulsions are due to reflex causes. Dentition is rarely a cause of convulsions, and only when some predisposing cause exists. Gastrointestinal disorders, however, are the chief exciting causes.

Convulsions are by no means as frequent as generally supposed at the onset of acute fevers, such as measles and pneumonia. They are more common at the onset of pneumonia than at the onset of measles. When they do occur there is usually some predisposing cause present. In several of the cases of convulsions associated with whooping cough a predisposing cause is present. Convulsions are by no means frequent in this condition, when no predisposing cause exists and complications occur.

Convulsions in early life may be the first sign of epilepsy, or may give rise to that condition in later life, and are more likely to become epileptic when there is no obvious cause for the attack. The writer considers that the fundamental cause of convulsions is some predisposing cause. James McIlraith (Medical Chronicle, January, 1907).

INFANT-FEEDING, ACIDIFIED MILK IN.

Buttermilk, buttermilk mixtures, and milk mixtures acidified with lactic acid bacteria are safe foods for infants, according to the authors, whether well or ill. Infants can thrive and gain on them for considerable periods of time. The use of a routine buttermilk mixture, as has been the custom in the past, is not so rational as that of an acidified milk mixture modified to suit the individual case, or of buttermilk modified by the addition of cream and milk-sugar. The preparation of such acidified mixtures, while not difficult, is not very practicable for private work. These mixtures and buttermilk are almost always taken well.

The results obtained from acidified milk mixtures in cases of malnutrition and chronic disorders of digestion are not materially different from those obtained from the use of other preparations of milk of the same percentage. They are worthy of trial, however, in cases of intractable disturbances of digestion, because some cases do much better on them than on other forms of modified milk. The authors have found that practically the same, and in some instances better, results are obtained in these conditions with pasteurized buttermilk as with acidified milk mixtures. This fact suggests strongly that the good results which are obtained with buttermilk mixtures are due to their low fat content in combination with a large amount of proteid in an easily digestible form, and not to the acidity or to the action of the bacteria. Pasteurized buttermilk gives very good results when given as the first form of milk-food after initial periods of water and starchy diets in acute intestinal indigestion and infectious diarrhœa. The writers think that it is possible that unpasteurized buttermilk will give even better results because of the action of the lactic acid bacteria on the intestinal flora. Fat-free milk acidified with pure cultures of lactic acid bacteria ought, however, to be safer and more reliable than commercial buttermilk. J. L. Morse and H. L. Bowditch (Archives of Pediatrics, December, 1906).

INFANT-FEEDING, WHITE-WINE WHEY IN.

The authors are very favorably impressed with the value of sherry whey or white-wine whey as an infant's food, but state emphatically that, like any other food which contains alcohol, it should never be given to infants in larger quantities or continued for a longer period than the exigencies of the case require. They have often used it as the only food for a week or ten days, or given at alternative feedings for two or three weeks. The whey is prepared by heating ten ounces of milk until just boiling, then adding two and one-half ounces of sherry, heating the mixture until it begins to boil up, when it is removed from the fire and allowed to stand a few minutes. The curd is then strained off through muslin. The whey is used when only small quantities of food can be tolerated and when a stimulant is necessary. To an infant six weeks old a tablespoonful can be given every half hour or every three-quarters of an hour, and the amount and interval gradually increased until two ounces are taken every two hours. In exceptional cases they have given three ounces, every three hours, to infants six months old, and even four ounces, every four hours, for two or three days, to an infant twelve months old. B. E. Myers and G. F. Still (Lancet, January 12, 1907).

INFLUENZA, NERVOUS SYSTEM IN.

Next to diphtheria there is no acute disease which affects the nervous system so severely as does influenza, and there is no other disease which has such varied nervous sequelæ. This very fact may lead to error by attributing too many nervous phenomena to an invasion of Pfeiffer's bacillus. At the onset of the disease the chief symptoms are those of the nervous system, pain, neuralgia, cramps, and headache. A very severe frontal headache, accompanied by pain in the back of the neck and at the back of the eyeballs, is almost pathognomonic of influenza. Sudden syncopal attacks are apt to occur at the outset; tachycardia and dilatation may develop. Various ocular complications have been recorded—optic neuritis, retinitis, and even meningitis. Paralysis of one or more of the eye-muscles sometimes occurs, and occasionally complete temporary blindness. Myelitis, herpes zoster, multiple neuritis, and numerous other complications are alluded to. W. Harris (Practitioner, January, 1907).

LEUKÆMIA, ROENTGEN TREATMENT OF.

Attention is called by the writer to the prompt subsidence of the enlarged glands at a distance from the parts exposed in a case of typical splenomedullary leukæmia with much enlargement of the glands. The spleen and the glands in the neck were exposed, not the bones nor the inguinal glands, and yet the latter glands retrogressed parallel with the retrogression of the exposed glands in the neck. This occurred before the favorable action of the x-rays on the blood had been manifest. The great benefit in this case has persisted unmodified for a year and a half to date. The writer thinks that this experience suggests the possibility of influencing leukæmia more rapidly than has been thought practicable hitherto, by exposing larger areas, especially the neck, where glands are so numerous, or the liver, which is so abundantly supplied with blood, in addition to exposure of the spleen. Even if the glands in the neck show no pathologic changes, yet exposure of this region may be directly curative owing to the distant action of the x-rays. This may activate the curative processes by a kind of autoserotherapy. The author advises eliminating the nonpenetrating rays, which have no curative action while they are liable to affect the skin injuriously. This is accomplished by filtering the rays through diachylon, generally four layers, which adheres to the skin and shuts out the injurious rays entirely. This allows more copious use of the really curative rays, freed from the danger of injury to the skin. V. Maragliano (Gazzetta degli Ospedali, Vol. xxvii, No. 141, 1906; Journal of the American Medical Association, January 12, 1907).

LIVER IN CARDIAC DISEASE, PATHOLOGY OF THE.

The writer presents the post-mortem records and detailed clinical histories of over 60 cases. He speaks of the ordinary case as the "back-pressure" liver, discussing the general "nutmeg" appearance, with its fat-absorption through the hepatic lobule and its fresh fat-deposition as the center. The main factor predisposing to the accumulation of fat in the central zone is undoubtedly stasis. The capsule is generally thickened, although this is slight in the case of Glisson's capsule. Fibrosis is found in varying degree about the sub- and central- lobular and hepatic veins.

The writer divides these livers into

three classes: the engorged liver, the nutmeg liver proper, and the cirrhotic nutmeg liver. He believes that the liver acts as a safety valve to the heart and that the various changes in structure undergone after prolonged back pressure, modify that safety-valve action and seriously alter the clinical course of a given case. The writer's experiments show that under conditions of cardiac stress the liver will draw off a large volume of blood from the right auricle; that after a time certain changes take place, leading to fibrosis, which very materially affects the distensibility of the liver; that the fibrotic process, by increasing the force of the liver's recoil, prevents the use of the latter as a reservoir in which blood may accumulate; that in complete compensation there are no engorgements of the liver and no back pressure; and that while the liver may be looked upon as a spongelike safety valve to the heart, continued use of this safety-valve action leads to its own abolition.

The ascites of cardiac diseases are divided by the writer into that of acute and that of chronic back pressure. The first type is characterized by the following features: (1) small in quantity, averaging one pint, or in one exceptional case four pints; (2) it is of a high color and often blood-stained; (3) the peritoneum of the gut is opaque with engorged veins marked on it, or of its normal semitransparency, but with engorged veins; and (4) in all cases there will have been œdema at the time of death, and in nine out of ten cases it will be of such amount as to be found post-mortem. In this type meager ascites only appears after the utmost expansion of the liver has taken place, and this failing entirely to relieve congestion, the pressure has been transmitted through into the portal vein and its tributaries, some of the fluid coming from the intestinal peritoneum, and some from the liver capsule.

Ascites of the second type is characterized by (1) being very large in amount, often requiring tapping; (2) of a clear yellow color; (3) the peritoneum of the intestines is invariably opaque and thick, peritoneal adhesions are very common (the veins may not be engorged to any great degree); and (4) the liver is invariably of the cirrhotic type. Ascites associated with this condition of liver is not necessarily the result of an increase in back pressure; it may and does often occur while the heart is compensated, so that some cases, notably one of the author's, spent the last year of life being tapped, and ended it with septic peritonitis, the heart being compensated the while. The effusion of fluid is in this type comparable to that in ordinary cirrhosis of the liver, due to the difficulty experienced by the portal blood in making its way through the fibrosed organ, a difficulty that may be doubtless increased by some degree of back pressure. R. N. Salaman (Lancet, January 5, 1907).

LUMBAR PUNCTURE, EFFECTS OF, ON CERTAIN CUTANEOUS PHENOMENA.

The writer has frequently had occasion to observe the great benefit from lumbar puncture and evacuation of a small amount of cerebrospinal fluid in cases of hydrocephalus from inherited syphilis and in convulsions in the course of some acute lung or intestinal affection, and also in cutaneous affections. A number of patients suffering from pruritis were cured by lumbar puncture and withdrawal of from 6 to 8 cubic centimeters of fluid. Patients with circumscribed lichen, eczema

without effusion, and prurigo found that the itching ceased after the lumbar puncture, and that their lesions healed. One patient with prurigo for six months, and another, who had had it for four years, had suffered to such an extent that sleep was impossible, but lumbar puncture with withdrawal of 20 cubic centimeters of cerebrospinal fluid put an end to the itching in each case, and the lesion soon healed under appropriate measures. The procedure had to be repeated a week later in the second patient. Neither has had the slightest recurrence of the trouble during the month and six months since. Great relief was also experienced by 2 patients with anovulvar pruritis and slight tendency to eczema. No benefit was derived from the puncture in some cases of urticaria, vulvar pruritis, and pruriginous affections of the scalp, but the striking benefit in others justifies a trial of the method, he thinks, in very rebellious cases. The effect of withdrawal of a few cubic centimeters of fluid was also marked on the roseola of syphilis, on various erythemata, psoriasis, and drug eruptions, but the effect was only transient.

The author ascribes the results observed to the modification of the blood by the withdrawal of the cerebrospinal fluid with a consequent influence on the peripheral nervous system, thus confirming the angioneurotic origin of certain dermatoses and of pruritus. P. Ravaut (Presse médicale, Vol. xiv, No. 100; Journal of the American Medical Association, February 2, 1907).

LUPUS, ROENTGEN RAYS IN THE TREATMENT OF.

When lupus attacks the face, it not infrequently happens that the mucous membrane of the nose is affected for some distance up the nostrils, and is exceedingly difficult to treat with an ordinary x-ray tube. For this purpose the author has adopted the expedient of applying the rays in small doses to the interior of the nose, mouth, ear, and other cavities, by means of highly exhausted electrodes used in conjunction with a high-frequency apparatus. Formerly such electrodes were generally attached to one end of the small solenoid, the current being passed directly through them to the patient. Used in this way the electrodes are soon spoiled, either by the vacuum running up too high or by the passage of a spark through the glass. Again, the application of ordinary high-vacuum electrodes to the cavity of the nose is apt to be painful, and the sparking from the tube to the free edge of the nostril is an inconvenience. The electrodes which the writer uses are highly exhausted tubes without any terminals. The mode of application is as follows: The patient is placed on the high-frequency couch, which is connected to the solenoid in the ordinary way. The operator then takes the electrode in his hand and brings it into contact with the affected part, and thus sets up a flow of current between the patient and himself along the tube. In order to avoid sparking round the nostril, the device of a short length of india-rubber tubing slipped over the glass is efficacious. Tubes used in this way last a long time. J. Hall-Edwards (Archives of the Roentgen Ray, January, 1907).

MALARIA, CEREBELLAR SYMPTOMS OF.

A case of malaria is reported by the writer in which he noted the unusual presence of cerebellar symptoms. It is well known that malaria can affect the central nervous system in a variety of ways. The patient, at the age of four-

teen years, during an attack of pernicious malaria, had manifested almost the same symptoms as during the present attack, the symptoms disappearing under quinine in the course of a month. As there was no hysteria and the influence of drugs and poisons could be excluded, the malady could only be ascribed to malaria. The symptoms represented an affection of the cerebellum. There was a moderate amount of debility, and nystagmus was absent, but with this exception the symptoms were cerebellar. There was a certain drowsiness, and the patient rested on her side in a contracted position. Her speech was monotonous, slow, and low-pitched, and her voluntary movements were uncoördinated, although she could stand without swaying. This is characteristic of cerebellar affections, as Babinski has shown. In cerebellar trouble the static equilibrium is preserved, while the kinetic equilibrium is severely disturbed. O. D'Allocco (La Riforma Medica. January 5, 1907; New York Medical Journal, February 9, 1907).

MEMBRANOUS ENTERITIS, ESSENCE AND TREATMENT OF.

The author gives his conclusions of ten years of study of hundreds of cases of this kind. He distinguishes two forms: the first, which he calls colica mucosa, is characterized by intermittent abdominal pain; while the other form, which he calls myxorrhœ coli, is free from the cramps, although sharing with the first form the chronic obstipation and the voiding of cylindrical masses of mucus. The second form is due to atony of the large intestine, while in the first form there is tonic spasm of the intestinal wall. Owing to the sluggish action of the bowels the mucus remains a long time in them and takes the shape of the tube. He encountered about 10 cases of colica mucosa in the course of the year, and about 100 of the second form. Colica mucosa is observed exclusively in extremely neurasthenic patients, both men and women. It is essentially a neurosis from irritation of the intestines, a primary purely nervous spasm of the colon. The second form of membranous enteritis is a neurosis from relaxation due to primary atony of the large intestine. Treatment of the latter includes cautious massage of the large intestine with the hand or a vibratory apparatus, preferably with the intestines empty; frequently repeated faradization of the intestines, with the abdominal walls relaxed; a more or less coarse vegetable diet, with buttermilk, kefir, honey, stewed fruit, milk-sugar, grapes, etc., enemata of cold water or glycerine, and glycerine suppositories. Astringents irritate the intestines and increase the production of mucus. It is important to clear the intestines from the accumulation of mucus, and if repeated soda-water or oil enemata do not accomplish the purpose, castor-oil as a mild purgative is given.

The colica mucosa is best treated by application of heat to the part, cataplasms, hot sitz and full baths, and sedatives in the form of a suppository with 0.01 or 0.02 gram belladonna, with or without codeine. Opium in any form is contraindicated, as it is apt to entail paralysis of the intestines, which increases the tendency to obstipation. In addition, sitz or full baths for twenty to twenty-five minutes should be taken three times a week, and warm enemata of pure oil, with or without soapy water, slowly injected under moderate pressure, to be retained for a time, supplemented by a milk-vegetable diet, the

vegetables all mashed and the fruit stewed. Internal administration of bromides, etc., does no good. The treatment of neurasthenia by physical-dietetic measures alone offers chance of success. A. Albu (Therapie der Gegenwart, Bd. xlvii, Nu. 6, 1906; Journal of the American Medical Association, January 5, 1907).

MIGRAINIC PSYCHOSES.

Twelve cases of typical psychoses in migrainic attacks observed during the last four years are reported by the writer. In the majority, if not in all, there are three mental states that have been inevitably found, viz., confusion, mild stupor with hallucinations, and sometimes vague unsystematized delusions and delirium. The hallucinations which are so frequent are mostly visual; some patients had auditory and some gustatory hallucinations. The confusional state predominated in all the author's patients. It was quite frequently accompanied by illusions of identity, incoherence of thoughts and language, disturbance of orientation. The delusions are all of a fleeting character and unsystematized. Some of the cases suggest psychic forms of epilepsy.

As to the time of appearance of the mental symptoms in relation to the migrainic attack, in the majority of these cases they developed during the attack when the headache reached its climax, and disappeared with the headache. In some cases they continued for twenty-four hours after the subsidence of the migraine. In a few cases the mental symptoms appeared at the end of the attack, in some only after the attack, and in one case they preceded the migrainic paroxysm.

The question has often arisen whether the transitory psychic symptoms observed in migrainic paroxysms are the result of the migraine itself or are manifestations of other neuroses, as epilepsy and hysteria gravis. That migraine may, in a certain group of cases, be of epileptic nature, *i.e.*, equivalent to epileptic seizures, is a well-known fact. The point of importance concerning migrainic psychoses consists of their intimate association with the same causes that produced the migrainic attacks themselves, and this is autointoxication. The histories of migrainic patients are all identical: constipation, obesity, hereditary predisposition, all figure in the life of such patients. Autointoxication, therefore, is to be expected, and, indeed, it is frequent. Alfred Gordon (Journal of the American Medical Association, January 5, 1907).

OPSONINS AND TREATMENT BY BACTERIAL VACCINES.

The recent work of Wright and others on the opsonins, and treatment of tuberculosis and other conditions by bacterial vaccines, are described by the writer. While the exact nature of the opsonic bodies is not known, they undoubtedly act on bacteria in such a way as to enable them to be taken up by the phagocytes. An increase of the opsonic content of the blood-serum can be brought about by the injection into the organism of vaccines. Of these, the best-known is the "old" tuberculin of Koch. The inoculation of a vaccine is always followed by the following train of events: a period of intoxication supervenes upon the inoculation, which is characterized by a decline in the antibacterial power of the blood; this "negative phase" is accentuated and prolonged according to the size of the dose of vaccine. It may be so

marked as to cause a temperature reaction and constitutional symptoms. Upon the "negative phase" there follows a "positive phase." characterized by an increase in the antibacterial power of the blood and corresponding to a period of increased resistance. After the negative and positive phases the blood may be maintained for a variable period at a somewhat higher level of antibacterial power. If the right initial dose of vaccine is used, the negative phase will not be too marked; it will be less with succeeding inoculations; and will be followed by a well-marked positive phase. If the dose is too large, the positive phase may be late or even entirely absent. J. L. Bunch (Lancet, January 19, 1907).

PANCREATIC DIABETES.

The experimental evidence of the etiologic rôle of the pancreas in the production of human diabetes is reviewed by the writer and he notes that excision of the pancreas produced glycosuria, but no abnormal metabolism of fats. Animals, after extirpation of the pancreas, never die in coma. A physiologic acidosis occurs when the carbohydrates are withdrawn from the diet, but the acidosis which occurs in diabetes is pathologic and never occurs as a result of the extirpation of the pancreas in animals. The occurrence of a severe form of diabetes with oxybutyric acid and acetone in the urine and with symptoms of coma indicates that the cause of the disease is situated elsewhere than in the pancreas. The absence of these symptoms is, however, no certain sign that the disease has its origin in the pancreas, for a severe form of diabetes may run its course for a long time under the form of a simple glycosuria. The fact that glycosuria may arise from affections of organs other than the pancreas indicates a possible participation of these organs (thyroid, adrenals, etc.) in the production of diabetes. The surest evidence that the pancreas is the organ at fault is a disturbance in the digestion and absorption of food, especially the fats and proteids. The occurrence of colicky pains in the upper part of the abdomen corroborates the view that the pancreas is affected. The differentiation of pancreatic from non-pancreatic diabetes is important from a therapeutic standpoint, as it enables the diet to be suitably regulated. Pancreas tissue, fresh or in some pharmaceutic preparation, will be found useful. With the pancreas preparations, fat and proteids can be allowed. Opium is indicated to delay peristalsis and to favor absorption. In such cases the glycosuria will disappear on withdrawing carbohydrates, provided sufficient fat and proteids are given to cover the calorific need of the organism. In pancreatic diabetes, the emphasis should be laid on the pancreas rather than on the diabetes. T. Brugsch (Therapie der Gegenwart, Bd. xlvii, Nu. 8; Journal of the American Medical Association, February 2, 1907).

PERNICIOUS ANÆMIA, ANOMALOUS CASES OF.

The author summarizes the histories of a group of cases in which prominent features were variously amaurosis, symptoms suggestive of peripheral neuritis, aphasia, gastrointestinal disturbances, kidney disease masking the anæmia, acute Bright's, intermittent pyæmia, long-continued symptoms with acute terminal attack, etc. He believes the disease is more common than fifteen or twenty years ago. It is not

essentially a blood disease at all, but rather a toxæmia of largely unknown, possibly very various, origin, which affects the blood, the blood-forming organs, the nervous system, and the gastrointestinal tract, in proportions which vary infinitely in different cases. The old idea of pernicious anæmia, that it is a condition of rapidly-advancing anæmia leading within a short time to a fatal issue, must be given up, for cases are on record of very prolonged duration, and there are many in which almost from the first to the last the anæmia is quite in the background, and the prominent symptoms are those due to the affection of one or other of the other systems mentioned.

Treatment is of value only in cases in which a diagnosis is made early. The author does not believe that the streptococcus or any other organism is responsible for the malady. The blood of pernicious anæmia represents in some ways a throw-back to the blood of early fœtal life, and it seems possible that in the people who become affected there may be inherent weakness of the resisting power and of the blood-forming organs which allows the bacterial processes which go on in every intestine to get out of hand, so that quite ordinary organisms acquire an unusual virulence, and set up the hæmolytic and other toxic processes which one sees in pernicious anæmias. The author has been strengthened in this feeling by the fact that within the last few months he has come across three cases of people in middle life whose fathers had died of pernicious anæmia, in one case ten, in another twelve, and in the third eight years before. This seems to point to an inherited weakness of the bone-marrow.

The writer lays special stress on diet in the treatment of pernicious anæmia. This should be arranged with care to suit each case, but the broad principles are that as long as the blood-count is low it should consist entirely of milk and farinaceous food; no meat of any kind should be permitted. Of course, this change of diet partly meets the second indication, the diminution of bacterial processes in the intestine. It is not uncommon to find that patients, when they are first seen, have large quantities of indican and similar substances in the urine, and that after a week or two on a farinaceous diet these practically disappear. In some cases it may be necessary to supplement this by giving intestinal disinfectants, of which, in the author's experience, calomel and salol are the most efficient; and in still others it may be necessary to wash out the bowel daily with large enemata of normal saline solution. Theoretically, the stomach might be washed out as well, but patients who are so seriously ill as to require this are seldom in a condition to stand the strain which it involves. The secretion of hydrochloric acid in the stomach is practically always deficient and usually absent in this disease, and he had sometimes found marked improvement from giving hydrochloric acid and pepsin in several doses after meals. G. L. Gulland (British Medical Journal, January 12, 1907).

PERNICIOUS ANÆMIA, TOXIC ORIGIN OF.

The writers review the researches made by leading men on the toxic origin of pernicious anæmia, and report two cases. They conclude that the practical difference between the old and

more recent results is no more striking than that between some of the older and newer theoretical conceptions upon which the therapy is based. This is very well illustrated by the fact that while in former times it was taught by some of the most prominent men of the time that the more food the patient could take the better, in the view of modern developments, as emphasized by Herter, smaller amounts are better, especially of proteid food. For any excess of proteid food reaching the part of the intestinal canal occupied by the proteid-splitting anaerobic bacteria of the lower bowel, simply furnishes material for subsequent decomposition into toxic and hæmolytic substances as the result of bacterial activity. The great value in the discovery that such a condition as pernicious anæmia can be so benefited by removing intestinal bacterial matter lies in the fact that it emphasizes the possibility of attacking other obscure diseases on the same ground. The agency of bacteria in disease seems to be well appreciated when they occur in contact with the surface of the body, in the oral or genito-urinary or respiratory cavities. Even the deleterious effect of the absorption of the products of the activity of the nonpathogenic or saprophytic bacteria is appreciated when occurring within the uterus, to produce a supræmia. Yet few seem to appreciate what a great amount of absorption must occur where the area of absorption is as great as that of the intestinal mucosa, or what a diversity of chemical products, many the results of bacterial activity, present themselves for absorption. A. W. Hollis and N. E. Ditman (Medical Record, February 2, 1907).

PERITONITIS, DIFFERENTIAL DIAGNOSIS OF.

The writer points out that the symptoms of the early stages of septic peritonitis are different from those usually given in the text-books. Fever is practically always present at the outset, but may be lacking in the later stages. The pulse is at first full and not over 100; it is only in the last stages that the Hypocratic facies and rapid, thready pulse are observed. Vomiting is constant in those cases that start from the appendix. Spasm of the abdominal wall is always present in cases of appendicial origin, and its extent shows how much of the peritoneum is involved. Spasm is lacking, however, in those cases in which the appendix is walled off and the abdomen is filled with a sterile serous exudate. Meteorism is another symptom given in the text-books, but not present in the early stages, when the abdomen is usually retracted. The gonorrhœal pelvic peritonitis, on the other hand, shows a rapid pulse and meteorism from the beginning, but spasm is lacking. The diagnosis can be made from the marked tenderness on palpation of the posterior cul-de-sac and on movement of the uterus. The distinction between these two forms of peritonitis is usually possible from the criteria above-mentioned, and is important, because the appendicial form demands immediate operation, while the gonorrhœal usually subsides in a few days, if let alone. Puerperal peritonitis resembles that due to the gonococcus in the presence of meteorism and the absence of spasm. A. Barth (Deutsche medizinische Wochenschrift, December 20, 1906; Boston Medical and Surgical Journal, January 17, 1907).

"RHEUMATISM" AND ITS TREATMENT.

The writer states that the various infections will account for every form of so-called "rheumatism" except muscular, and that is an intoxication. This intoxication accompanies or precedes most articular and some nerve infections. The term "rheumatism" is a misnomer, but must be retained for a time, until real facts are appreciated by the profession and laity. Better diagnosis will bring intelligent treatment. Intelligent treatment means the use of combined methods and a thorough working knowledge of the case. This should consist of prophylaxis, better understanding between patient and physician, with attention in the main to social conditions, dietetics, exercise or rest, as indicated, elimination by proper baths, fresh air, the right coöperative mental attitude, and in some cases climate. Autointoxication with faulty elimination is directly responsible for these conditions.

It is necessary for physicians to make a greater study of the toxic effects of leukomains and to lay more on the findings in the urine of the products of indigestion. An examination of the urine is important, in every case, for these products of metabolism as well as albumin, casts, and sugar. Heredity has no effect except as establishing social conditions followed by the family. The writer calls attention to the importance of baths, and the precedence of hot mud packs over other baths, for equalizing the circulation, stimulation of glandular activity, and elimination. A sedentary life and also great muscular fatigue should be avoided, the latter being a cause of muscle pains in children and workingmen.

Alkaline waters and drugs hold a large place as antacids and antiseptics to the intestines, though they are greatly abused. Hot baths must not be given in dilated hearts, high blood-pressure, arteriosclerosis, tuberculosis, and great emaciation, though they are indicated in autointoxication without such complications. F. J. Walter (Medical Record, January 10, 1907).

RHEUMATISM AS CAUSE OF AORTIC ANEURISM.

So much attention has been paid to syphilis as a cause of aortic aneurism that other factors have been overlooked. The influence of rheumatism is one of great importance, especially in young patients. The writer, working with Rénon, has recently published some important observations relative to this subject. According to the cases collected by this author, the average age is from 10 to 16, when the patients have usually had several attacks of acute rheumatism. Repetition of the disease is regarded as an essential factor. The appearance of aneurism is preceded for some time by the signs of aortic incompetence and hypertrophy of the heart. After a period of considerable latency, the symptoms and signs of aneurism appear rapidly. They are dyspnœa, especially marked after effort, and characterized by forced inspiration without actual oppression. After a short time this dyspnœa becomes permanent, though occasionally varied by pseudo-asthmatic crises, sometimes attacks of pain resembling angina pectoris. The attacks usually appear during the first sleep. The patient retires to rest in his ordinary condition, but suddenly awakens in great agony, complaining of a feeling of constriction in front of the chest, air hunger, desire to cry out, and violent inspiratory efforts are made. The crisis may last from a quarter to one hour, and

then gradually disappear. Occasionally the crises are entirely painful without respiratory trouble. They may, therefore, be pseudo-asthmatic or pseudo-anginal. Considerable intervals may elapse between them, for in one case quoted by the author they numbered two or three during the year; in others they are more frequent, occurring once a month, or even daily. The diagnosis is confirmed by the rapid appearance of physical signs. These aneurisms, as a rule, affect the upper right costal area, and do not differ from those usually observed in other cases. Aortic aneurism in young rheumatic subjects may develop fully in the course of a few weeks, sometimes in succeeding stages corresponding to the rheumatic crisis. After each crisis there may be temporary improvement, due to retrocession of the tumor. This improvement is reversed by a fresh crisis of articular inflammation. The condition is, therefore, progressive, and there is little hope of obliteration taking place in the sac. Prognosis is usually fatal, death often occurring suddenly either from hæmorrhage or as the result of an anginal seizure. A rare event is progressive cachexia.

Treatment can only be directed towards symptoms, nitrites being given for dyspnœa and pain, and salicylates should not be omitted in view of the rheumatic nature of the disease. Feytaud (Thèse de Paris, 1906; British Medical Journal, January 12, 1907).

SCARLET FEVER, CHLORAL HYDRATE IN THE TREATMENT OF.

Chloral hydrate is of distinct value, according to the writer, in the treatment of scarlet fever, and, when used in doses of sufficient size to secure light somnolence, does not seem to be a circulatory depressant. It ameliorates nervous symptoms better than any remedy yet suggested in the treatment of scarlatina, and allays the itching of the skin often found annoying in scarlet fever. When chloral hydrate is given routinely during the febrile period and for some days thereafter, postfebrile nephritis appears to be less frequent. B. Franklin Royer (Therapeutic Gazette, January 15, 1907).

SCIATICA, CHRONIC, TREATMENT OF.

A therapeutic suggestion is made by the writer, who reports four cases, and commends the use of static electricity. Attention is called to the fact that this form of electricity differs radically from currents derived from battery or dynamo on the one hand—whether continuous faradic, sinusoidal, or polyphase—and from "high-frequency" currents on the other. Its voltage is enormous, its amperage infinitesimal, and its frequency of pulsation (for it is not alternating in ordinary circumstances) anything that the operator wills. He employs in these cases the wave current, the brush, and indirect sparks.

With regard to early sciaticas and other forms of neuritis, the author claims that invariably, if the patient be not too old, one can effect a rapid cure, provided the case can be brought under treatment right from the onset. All forms of neuritis or neuralgia, provided they are not due to tumor pressure or other unremovable cause, are among the most satisfactory of the many causes that can be cured or relieved by this most potent therapeutic agent. J. C. Webb (Lancet, January 12, 1907).

TYPHOID FEVER, INTESTINAL PERFORATION IN.

Perforation of the bowel in typhoid fever is more common than is generally supposed, occurring once and a trifle over in every three deaths. The most common time of perforation is between the fourteenth and the twenty-first days. In 92 per cent. of the cases of the present series the perforation occurred between the second and fifth week inclusive. The earlier cases were probably perforation in a relapse; now and then perforation may occur without evidence of previous illness. This complication occurs in cases of all grades of severity, from the ambulatory to the hæmorrhagic type. It is most common in those with moderate (25 per cent.) and severe (50 per cent.) infection (75 per cent.). It is more common in the hæmorrhagic than in the mild cases (10.8 per cent. to 8 per cent.).

The ileum is the common site of perforation (88 per cent.); the majority occur within twelve inches of the ileocæcal valve; the appendix and colon, respectively, were the next most frequent sites of perforation in this series of cases. Pain of some kind is present in 75 per cent. of all cases. In 50 per cent. of the cases the onset is sudden and severe and of increasing intensity, localizing itself to a special zone. In 20 per cent. of the cases the pain is of slow onset, not localized, with general distribution. In some cases (12 per cent. of this series) no pain is complained of, and the usual symptoms of perforation are absent. Tenderness and rapidity are present in from 75 to 65 per cent., respectively, of all cases, and are usually combined; in some cases either one or the other may be wanting; rigidity especially may be absent in cases with rather a pendulous and relaxed abdominal wall.

When perforation is suspected the temperature should be taken every hour; only by this means can the immediate rise and slow fall to normal or subnormal which often occurs be detected; in some cases, and especially those of extreme toxicity, no noteworthy change at all in the pulse, temperature, or respiration can be detected when perforation occurs. Diagnosis is then only an inference. Distension (if absent during the course of the disease and at the time of suspected perforation) is a late symptom of perforation. The obliteration of the liver dullness is not a reliable sign of perforation.

The study of the leucocytes is of little aid. In a few cases their increase is such as to assure the diagnosis. In a considerable number of cases there is a decided reduction in leucocytes after symptoms of perforation. Differential counting is not of practical use.

Before being assured of the diagnosis, right-sided pleurisy, pneumonia (especially in the young), cholecystitis, acute gastrointestinal indigestion, femoral and iliac thrombosis, appendicitis, peritonitis without perforation, cystitis, rupture of a mesenteric gland, or even hæmorrhagic exudation into the abdominal muscles (Zenker's degeneration) should be considered. Even then mistakes in diagnosis will be made.

While nature will infrequently close one, two, or even three perforations, the only rational procedure when perforation occurs is operative interference. No case is too desperate for the attempt. Not infrequently the so-called mild cases succumb, while very ill ones recover. The diagnosis made, time for operation has arrived; its important point is rapidity. Closure of the per-

foration and drainage is all that is needed; fifteen to twenty minutes should suffice. J. A. Scott (New York Medical Journal, February 9, 1907).

VOMITING DURING EARLY LIFE.

Vomiting may be the expression of an irritant or toxin acting upon some distant part, as well as one acting locally on the stomach. In infancy the vomiting reflex is always sensitive, like the crying reflex, the coughing reflex, and the heat reflex. With children of a neurotic type, those who are sick and those who are badly nourished, this sensitiveness is exaggerated. Nearly all the troublesome cases are in those babies who are artificially fed. If there is stenosis of the pylorus, vomiting cannot be prevented; while if the infant is breast-fed, the mother's milk is, as a rule, too rich. In many of the cases there is gastric inertia, dilatation with gas from decomposing contents, and then rejection and intolerance. Washing out the stomach and then beginning again with small quantities of whey or diluted milk will often enable an infant to get a fresh start. Vomiting with fever may be the initial vomiting of scarlet fever, the severe and continuous vomiting early in pneumonia, the severe vomiting with high fever in influenza, persistent vomiting during diphtheria or convulsions, etc. Attacks of vomiting in neurotic children may begin suddenly and continue for several days, with drowsiness, with acetone in the breath and in the urine. These attacks are very suggestive of meningitis, but may be due entirely to gastrointestinal intoxication. Vomiting with peritonitis and obstruction of the bowels points necessarily to urgent conditions within the abdominal cavity. H. Ashby (Pædiatrics, December, 1906).

Book Reviews

A MANUAL OF NORMAL HISTOLOGY AND ORGANOGRAPHY. By Charles Hill, Ph.D., M.D., Assistant Professor of Histology and Embryology, Northwestern University Medical School, Chicago. 12mo Volume of 463 Pages, with 312 Illustrations. Flexible Leather, $2.00 net. W. B. Saunders Company, Philadelphia and London, 1906.

This manual of 463 pages has been written purely in the interest of the elementary students, and throughout the volume the promises of the title page have been fulfilled. The subject matter has been presented in a clear and very concise manner, and allows the teacher-in-charge to supplement the chapters by collateral work, as may seem fit for the particular course offered. The introduction is taken up with the preparation of material, and the discussion, in a very brief manner, of the advantages and the disadvantages of celloidin section and paraffine embedding. The first chapter contains mainly the development of the cell and its fertilization. This is followed by the consideration of the variety of cells, and their arrangement in the composition of the different tissues. Beginning with the circulation, the author treats the different systems in relation with the various organs, gives considerable attention to the oral cavity, and finally ends his manual with a brief outline of laboratory technic, including the standard stains and fixing solutions. The illustrations are quite numerous, and are fairly descriptive. Two plates of the upper and the lower jaws, together containing fourteen cuts, show admirably the development of the teeth from the ninth month. This book should prove a decided help to the student beginning the study of histology, and especially to one taking up dentistry; but the text is hardly complete enough for him to continue his studies in this branch without frequent references to one of the standard works. —R. B. S.

A TEXT-BOOK UPON THE PATHOGENIC BACTERIA. For Students of Medicine and Physicians. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. New (Fifth) Edition. Octavo Volume of 647 Pages, Fully Illustrated, a Number in Colors. Cloth, $3.50 net. W. B. Saunders Company, Philadelphia and London, 1906.

The mere announcement of the publication of a new edition of this book should be sufficient recommendation for its continued popularity among students and physicians. In this work it is the intention of the author to convey to the reader a concise account of the technical procedures necessary in the study of bacteriology, a brief description of the life-history of the important pathogenic bacteria, and a sufficient description of the pathological lesions accompanying the micro-organismal invasions, to give an idea of the origin of symptoms and the cause of death.

The writer has carefully analyzed the reviews of past editions, and in the present one has followed certain suggestions offered, has added considerable new matter, and eliminated much that was old and useless. Even with these decided changes, which have been for the better, he still adheres to his original plan of limiting the book strictly to pathogenic bacteria. Realizing the rapid advance which has been made in the knowledge of infection and immunity, the author has carefully rewritten the chapters on these subjects, and has brought them up to date. The footnotes continue to be rather numerous, but these references should be a decided advantage to the students, especially to those who desire to continue their studies in this branch, but who do not care to reach exhaustive conclusions. The 190 illustrations, a number of which are colored, are of the best, and worthy of note. They are unusually clear, and the details are sharply defined.

Considering that to-day so much depends upon the knowledge of bacteria causing the different diseases, and the successful treatment upon a clear understanding of the means for their elimination from the body, it is with much pleasure that we recommend this book to students and physicians who are anxious to keep abreast of the advance of medical science.—R. B. S.

THE OPERATING ROOM AND THE PATIENT. By Russell S. Fowler, M.D. W. B. Saunders Company, Philadelphia, 1906.

This is an admirable little book, in which the author has very carefully collected and described the various methods of preparation of material of all kinds needed by the operating surgeon. He describes and illustrates the position of the patient for various operations, and gives a list of the instruments commonly used. It will be especially valuable to nurses and hospital internes, and to the operating surgeon, as it gives a concise account of the various formulæ used in preparing surgical dressings, solutions, etc., in a readily accessible form. It supplies a need to the busy practitioner, and enables him to have in one place information which can only be gleaned from a great number of detached articles.—W. J. T.

ATLAS AND TEXT-BOOK OF HUMAN ANATOMY. Volume II. By Professor J. Sobotta, of Würzburg. Edited, with Additions, by J. Playfair McMurrich, A.M., Ph.D. 194 Pages, 214 Illustrations, Mostly in Colors. W. B. Saunders Company, Philadelphia and London, 1906.

In this, the second volume, we have displayed the viscera, including the heart. What was said in commendation in reviewing volume I may be repeated with greater emphasis here. The illustrations are exquisite, presenting modelling and distance in an unusually graphic quality for illustrations of this kind. The coloring is also more delicate and exact than would seem possible of reproduction. Particularly to be commended are drawings which exhibit serous surfaces, which are lifelike in a high degree. The text is also to be commended, as assisting mightily the clinician. Of course, it is incomplete, but suggestive and clear. The larger plates are accompanied by a drawing on the same scale to act explanatorily. This is an admirable method of emancipating the color scheme from marring. —J. M. T.

CONSUMPTION AND CIVILIZATION. By John B. Huber, M.D. J. B. Lippincott Company, 1906.

The publishers present in this charming book of Dr. Huber's, not merely a text-book, a compend on a vital subject, not merely a scientific treatise, but a philosophic and literary masterpiece. A trite subject is offered in such guise as to hold the attention and give constant pleasure in the reading. Moreover, it can be opened anywhere and still be fascinating. It is needless to comment specifically on the subject matter, which is thoroughly well considered by one fully competent to speak, except to remark that most of the ground has been covered. Tuberculosis is discussed from the standpoint of its effects upon civilization, and in its manifold and complex interrelationships with human affairs. "Manifestly, medical science cannot cope alone and unaided with the difficult and prodigious world problem: many forces—economic, legislative, sociologic, humanitarian—must be enlisted." The technicalities amply presented, yet succinct—are refreshed by quotations and allusions from world illuminators in all lines, medical, scientific, poetic, religious. History is enlisted to furnish parallels, economic movements, tendencies both hopeful and exasperating. Throughout, the keynote is that of education for the masses in right living.—J. M. T.

A TEXT-BOOK OF PATHOLOGY. By Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Fifth Revised Edition. Octavo of 977 Pages, with 399 Text-illustrations, Many in Colors, and 7 Full-page Colored Plates. Cloth, $5.00 net; Half-Morocco, $6.00 net. W. B. Saunders Company, Philadelphia and London, 1906.

When so well-known and highly esteemed a text-book as the one before us is presented, little can be said except to call attention to the changes as indicated. In the present instance the author announces that he has reconstructed a large part of the sections dealing with general pathology, and has also extensively revised and increased those on "Inflammation," "Immunity," and "Animal Parasites." He also mentions the temptation—over which he triumphed—to add much new matter on pathologic physiology. As a matter of fact, the great need to-day is a thoroughly good book on this subject. The reason why we haven't got it is because the physiologic facts essential as groundwork, do not exist. We can well recall with what glee we secure a copy of "Krehl," and what disappointment followed. Indeed, Lazarus Barlow's "General Pathology" is even more helpful and far more suggestive. Stengel's book continues to sustain its high reputation as being the most comprehensive and clear clinical pathology in the market.—J. M. T.

DISEASES OF CHILDREN, a Manual for Students and Practitioners. By George M. Tuttle, M.D. Second Edition, Revised and Enlarged. Illustrated with 5 Plates in Colors and Monochrome. Lea Brothers & Co., Philadelphia and New York. One of Lea's "Series of Pocket Text-books."

The book before us is designed to fill a similar, though not precisely the same, need as the one by Professor Zahorsky. The arrangement is similar to that of the ordinary text-book, and the facts are set forth clearly and concisely, and with admirable regard to customary teachings.—J. M. T.

GOLDEN RULES OF PEDIATRICS. Aphorisms, Observations and Precepts, Practical Rules for Diagnosis, Prognosis, the Essentials of Infant-feeding and the Principles of Scientific Treatment. By John Zahorsky, A.B., M.D., with an Introduction by E. W. Saunders, M.D., St. Louis. C. V. Mosby Medical Book Company, 1906.

Professor Zahorsky's book well fulfills the claim set forth in the title. As he remarks in the preface, "Since the day of Hippocrates aphorisms have been a favorite mode of expressing the essential truths of the medical science." If this feature were carried out in the larger text-books, it would add greatly to their clarity and usefulness. By this process are eliminated moot points, conjectures, reasonable inferences, and oftentimes unreasonable conclusions. But worst of all are omitted vast amounts of repetition of things not only non-essential, but frequently misleading, yet all set forth with an air of finality most dis-

turbing to correct judgment. It is reasonable to assume that books of this character are of more use to the clinician than the text-book. An excellent feature is the typing. Instead of wasting space in headings, the sentences are so arranged that the first few words, exhibited in heavy type, suffice for a heading. Obviously, Professor Zahorsky is an incisive teacher, and those students are fortunate who sit under such a master. Failing immediate contact, the reading of such a book, which can be had at any time and any place, is especially instructive.—J. M. T.

TUMORS OF THE CEREBRUM, THEIR LOCAL DIAGNOSIS AND SURGICAL TREATMENT. By Charles K. Mills, Charles H. Frazier, William G. Spiller, George E. Schweinitz, Theodore H. Weisenburg. Edward Pennock, Publisher, Philadelphia, 1906.

The small book before us consists of reprints of articles chiefly from University of Pennsylvania Medical Bulletin, although the Journal of the American Medical Association is represented. The series constitutes a valuable contribution on the subject, being in one volume a pretty thorough presentation of the entire subject by competent authors.—J. M. T.

THE PRACTICAL MEDICINE SERIES, Comprising 10 Volumes on the Year's Progress in Medicine and Surgery. Edited by Gustavus P. Head, M.D., of Chicago Post-graduate Medical School. Volume 8, Materia Medica, Therapeutics, Preventive Medicine, Climatology, and Forensic Medicine. Edited by George F. Butler, Henry B. Favill, Norman Bridge, Daniel R. Brower, and Harold N. Moyer. Price, $1.25 each; for the series of 10 volumes, $10.00. The Year Book Publishers, Chicago.

The arrangement of the text is excellent, being in the main alphabetical, which expedites consultation. Subjects are reviewed thoroughly and yet with the utmost brevity. The book contains a few well-chosen illustrations, and altogether is likely to render admirable service to physicians who cannot afford a large library, and yet, by this means, can each year, possess the gist of the year's work.—J. M. T.

Books and Monographs Received

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"The Local Treatment of Diphtheria." By J. D. Rolleston, London, Eng. 1906.——"The Fat Content of the Tonsils and Its Relation to the Processes of Metabolism and Infection." By Jonathan Wright, New York. 1906.——"The Origin and Heredity of Matter." By Jonathan Wright, New York. 1906.——"The Indications for Surgical Interference in Disease of the Faucial Tonsils and the Methods of Choice in Operating. An Analysis of 480 Cases." By W. E. Casselberry, Chicago, Ill. 1906.——"Laryngeal Disturbances Produced by Voice Use." By W. E. Casselberry, Chicago, Ill. 1906.——"A Brief Resumé of the World's Recent Cancer Research." By W. S. Bainbridge, New York. 1906.——"The Growing Years." By W. S. Bainbridge, New York. 1906.——"A Clinical Lecture on Malignant and Nonmalignant Growths." By W. S. Bainbridge, New York. 1905.——"Malignant and Nonmalignant Growths." By W. S. Bainbridge, New York. 1906.——"Mensuration of the Child in the Uterus with New Methods." By Ellice McDonald, New York. 1907.——"Some Aspects of Heart-block. Forms of Negative Venous Pulse." By William S. Morrow, Montreal. 1906.——"A Brief Resumé of the Work Done in the Section of Diseases of Children, at the Boston Meeting of the American Medical Association, held June Last." By E. E. Graham, Philadelphia. 1906.——"Diagnosis of Tuberculosis in Infants and Children." By E. E. Graham, Philadelphia. 1906.——"Treatment of Infantile Diarrhœa." By E. E. Graham, Philadelphia. 1906.——"Diagnosis and Treatment of Some of the Ordinary Diseases of the Rectum." By Lewis H. Adler, Jr., Philadelphia. 1905.——"Medical Specialism, with

Especial Reference to Proctology." By L. H. Adler, Jr., Philadelphia, 1906.——"Notes on Recent Advances in Laryngology and Rhinology." By C. H. Knight, New York. 1906.——"The Teaching of Laryngology, Then and Now." By Charles H. Knight, New York. 1906.——"Fibroid Tumors of the Uterus." By C. P. Noble, Philadelphia, 1906.——"Treatment of Croupous Pneumonia in Children." By Joseph E. Winters, New York. 1906.——"Feeding in the First Year of Infancy." By J. E. Winters, New York.——"A Review of the Opsonins and Bacterial Vaccines." By E. M. Houghton, Detroit, Mich. 1907.——"Fractures of the Spine, with Report of Two Cases Terminating in Recovery." By W. Page McIntosh, Portland, Me. 1907.——"Some Remarks on Prostatic Hypertrophy." By C. E. Chetwood, New York. 1906.——"Prostatectomy in Two Stages: A Conservative Operation with Minimum Hazard." By C. H. Chetwood, New York. 1906.——"The Milking Machine as a Factor in Dairying." By C. B. Lane and W. A. Stocking, Jr., U. S. Department of Agriculture, Washington, D. C. 1907.——"Notes on the Biology of Certain Weevils Related to the Cotton Boll Weevil." By W. Dwight Pierce, U. S. Department of Agriculture, Washington, D. C. 1907.

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CLINICAL DIAGNOSIS OF ARTERIAL SCLEROSIS.[1]

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In considering the subject of arterial sclerosis we must differentiate clinically between (1) the normal thickening of the arterial wall which occurs after the age of forty years; (2) the atheroma which is so characteristic of the aged; and (3) arterial spasm from any cause. Pathologically, we are able to clearly differentiate certain cases of arterial sclerosis from syphilitic endarteritis, but clinically, in the absence of a history or signs and symptoms of syphilis, this differentiation is usually impossible. For diagnostic purposes we may assume that the arterial wall may be demonstrated by palpation to be thickened, after the age of forty years. For the purpose of diagnosing this condition, we must devote ourselves first to the direct examination of all accessible superficial arteries by means of inspection and palpation, and include the results of instrumental examination, not forgetting the ophthalmoscope; secondly, the examination of the urine; and thirdly, the examination of the heart. The study of the radial arteries gives most valuable information, but it must not be forgotten that the fibrotic process may be inconspicuous in the peripheral arteries and well advanced in the internal arteries, more especially the cerebral vessels; and occasionally fibrosis may be advanced in the peripheral vessels with but little or no change in the cerebral arteries. In palpating the radial artery it is important to remember that normally this vessel not infrequently varies in size and situation, and it is therefore necessary that

[1] Prepared and read by request before the Medical Examiners' Association of Philadelphia, March 5, 1907.

each radial should be examined separately. Occasionally an anomaly of this artery may be so marked as to make extremely difficult discovery of the pulse even in health. It should also be remembered that the excessive deposition of adipose tissue or the presence of œdema may absolutely prevent successful examination of the radial arteries by the palpating fingers. It seldom happens that radial sclerosis is diagnosed when it is absent, but the failure to definitely recognize slight or moderate radial sclerosis is not unusual.

Arterial sclerosis may be mistaken for arterial spasm, as the results of palpation of the vessels in these conditions are quite similar. The differential diagnosis, however, gives but little difficulty when attention is directed towards this possibility. Arterial spasm more usually occurs in the young, and in the adult may complicate certain cases of moderate or slight arterial sclerosis. In such cases palpation reveals an artery, the wall of which feels thicker and the artery smaller than normal, the lumen of which appears to be diminished. In other words, the finger recognizes that the arterial wall thickening exists at the expense of the lumen, and an analogy may be drawn between this condition and that of concentric hypertrophy of the heart, where the wall of the heart is thick and the cavity is small. The common causes of arterial spasm are: (1) acute uræmia occurring in the course of acute parenchymatous nephritis, examples of which are to be found in scarlet fever, or any similar infective process; (2) in certain cases of severe acute intestinal toxæmia; (3) in certain cases of irritant or chemical poisoning. An example of the last group came under observation at the University Hospital, some years ago, and occurred in a girl aged seven years, who swallowed approximately three or more ounces of Worcestershire sauce by soaking bread in this sauce and consuming the bread. Arterial spasm may occur at any age in subacute Bright's disease, accompanied by slight arterial sclerosis complicated by acute uræmia. It is more than probable that minor degrees of arterial spasm occur from a variety of causes, but the changes thus produced are so slight as to escape detection. Apart from the results obtained by palpation, which have already been described, the cardiac and renal signs of arterial spasms may exactly simulate arterial sclerosis, and we are therefore compelled to rely upon the knowledge of the cause and character of the arterial change.

In palpating the right radial artery it is important to stand upon the right side of the patient. The arm should be slightly flexed; the hand of the patient should be closed by the right hand of the examiner and should be moderately pronated; the tips of the index, middle, and ring fingers of the left hand should be brought into contact with the radial arteries as near the wrist joint as possible, and the hand of the patient should be gently

flexed and extended until that position is discovered in which the artery is most accessible to palpation. The vessel should then be examined to discover whether it is more superficial than normal, which is a common characteristic of sclerotic arteries. The course of the artery should also be observed, as in advanced cases this vessel, because of its abnormal length, describes a curve instead of a straight line. The finger-tips should then be passed to and fro, parallel with the long axis of the artery, so as to recognize irregularities or the so-called rings that are characteristic of atheroma with calcareous deposits. Gentle pressure, varying in degree, should then be applied in order to estimate the resistance of the vessel to a compressing force. When the lumen of the artery is filled with blood under high tension, it is sometimes difficult or impossible to determine whether the increased resistance to the finger is due to this cause or to sclerosis, in which event the ring finger should be pressed firmly against the artery until the pulse can no longer be felt by the index or middle fingers, which indicates that the vessel is empty. The empty vessel may then be gently rolled under the index and middle fingers, and if the wall is distinctly palpable, as it is pressed against the flat surface of the radius, it usually indicates an abnormal thickening or sclerosis, if the individual be less than forty years of age. In the beginning it is more satisfactory to employ both hands in this procedure, until, by frequent repetition, the necessary skill is acquired by which it may be accomplished in the manner described. When both hands are employed the arm may be allowed to rest upon a convenient support and the index and middle fingers of the left hand should so compress the artery that the pulse cannot be detected in the distal portion of this vessel by the palpating fingers of the right hand. This permits the examiner to more easily concentrate his attention upon the results obtained by the palpating fingers, in order to determine the presence or absence of sclerosis.

This same method is applicable to the examination of the left radial artery, in which event, however, the patient should be approached from the left side and the patient's hand should be held by the left hand of the examiner and palpation performed by the index and middle fingers of the right hand. One skillful in examining the pulse and artery truly possesses the tactus eruditus.

It is obviously necessary that the skin covering the tips of the fingers should be thin, warm, and sensitive, and the nails properly trimmed. If the fingers be cold, tactile sensibility is benumbed. Occasionally, when sclerosis is marked, the radial arteries may be traced upward as far as the juncture of the superior and the middle third of the arm.

The radial artery is best located, anatomically, for the determination of sclerosis, because (1) of its ready accessibility; (2) its usual superficiality; (3) its mobility; and (4) its relation to the flat surface of the radius, giving an unyielding surface against which it may be pressed. This artery may be called, diagnostically, the "artery of sclerosis."

The procedure already described may, in suitable cases, be applied to the following arteries, which are named in the order of their availability for diagnostic purposes: (1) the temporal; (2) the carotid; (3) the brachial; (4) dorsalis pedis; (5) femoral; and (6) abdominal aorta.

A relationship exists between arterial sclerosis and the left ventricle of the heart, for the reason that the work of this hollow muscle is increased *directly* in proportion to the amount of sclerosis, which increased work, under ordinary circumstances, induces a corresponding or compensatory hypertrophy. In moderate or well-marked examples of arterial sclerosis, the physical signs of hypertrophy of the left heart are usually discoverable, *i.e.*, a displaced and more forcible apex beat, occupying a larger area, and not infrequently found below or slightly to the right of the left nipple line, an enlarged area of cardiac dullness, chiefly towards the left, and an exaggeration of the first sound, the amount depending upon the degree of arterial sclerosis and the integrity of the myocardium. In advanced cases dilatation of the left ventricular cavity permits the development of the systolic murmur of mitral insufficiency. The aortic second sound is usually accentuated, as is also the second sound heard over the apex. When the blood-pressure is low the aortic sound may not be accentuated, but as a rule hypertension is present. When the other causes of left ventricular hypertrophy are excluded, the phenomena described are not only diagnostic of arterial sclerosis, but the amount of cardiac change, in certain cases, gives some idea as to the degree of arterial sclerosis.

In certain cases of slight, moderate, or even advanced arterial sclerosis, the study of the urine gives *no* information of diagnostic importance. In many cases of marked and especially advanced cases of arterial sclerosis, the renal vessels participate in the general process of sclerosis to such an extent as to greatly impair the integrity of these organs and permit of the transudation of albumin and the appearance in the sediment of tube casts, chiefly of the hyaline variety. It must not be forgotten that the blood-vessel supply to these organs is so rich, that their shape and appearance are preserved if the vessels are injected and all remaining structure removed.

In this country the causes of arterial sclerosis, in the order of frequency, are as follows: (1) excessive muscular work; (2) alcoholism; (3) syphilis; (4) excess in food, especially of the nitrogenous variety; (5) gout; (6) intes-

tinal toxæmia; (7) uræmia; (8) excessive mental work, especially in those possessing a neurotic temperament; (9) various infections, such as rheumatism, chronic septicæmia, typhoid fever, etc.; (10) plumbism; (11) nicotinism; (12) long-continued excess in fluids; (13) congenitally weak vascular apparatus, (*a*) syphilis, (*b*) offspring of senile parent or parents, (*c*) unknown causes. Combinations of these causes are not infrequent, especially syphilis, nicotinism, and alcoholism with excessive muscular or mental work.

Clinically, the discovery of an important cause of this disease, which has exerted its influence for a considerable length of time, would lead one to strongly suspect the existence of arterial sclerosis.

The small amount of time allotted to this paper and the request that it be prepared so as to aid the medical life insurance examiner in his routine work, precludes reference to the valuable and important information revealed by the ophthalmoscope, the Riva Rocci blood-pressure apparatus, the sphygmograph and other instruments employed in examining the cardio-vascular system.

THE VALUE OF THE OPHTHALMOSCOPE IN THE EARLY DIAGNOSIS OF ARTERIOSCLEROSIS.[1]

By WENDELL REBER, M.D.

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Arteriosclerosis (which is the starting point of most diseases of the retinal vessels) is a much commoner clinical picture to-day than it was twenty-five years ago. Formerly viewed as a senile manifestation and necessary accompaniment of old age, it has come to be recognized as one of the commonest sequences of the strain of modern life. Collins alludes to it as "a general disease, with predilection for certain localities."

Stengel (Proc. Phila. Co. Med. Soc., 1905) recognizes three clinical stages, to wit:—

1. A preliminary one, difficult of recognition in its beginnings, and confusing to the clinician in his efforts to distinguish the part of the etiologic factors from that of the arterial disease in the symptom-complex.

2. A middle period, during which the arterial disease is easy to recognize, but in which secondary organic changes have a rôle of variable importance.

3. A final stage of failure of circulation, organic failure and terminal infections.

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[1] Presented, by invitation, to the Medical Examiners' Association of Philadelphia, Tuesday, March 5, 1907.

It is the belief of the writer that skillful use of the ophthalmoscope in Stengel's first or preliminary stage might often help to establish a definite positive or negative diagnosis in such cases. Stengel himself (Pennsylvania Med. Jour., Aug., 1904) has said: "The ophthalmoscope may reveal the positive evidence of vascular disease, before the disease (arteriosclerosis) has become marked."

Greenwood (Trans. Sec. Ophthal. A. M. A., 1904) feels that the importance of retinal arteriosclerosis is not ordinarily recognized; that indeed it is oftener overlooked, or, if observed, only given a passing thought, unless of a degree sufficient to cause a grave lesion of the retina, and then looked on as a progressive disease that treatment will not stay or alter.

L. F. Bishop points to the fact that "the heart, blood-vessels, and kidneys go hand in hand, and serious disease of one is not found without involvement of the others. When these structures are studied together, it is found that the earliest indication of disease of one is often discovered in disorder of the other. Chronic Bright's disease is not essentially a disease of the kidneys, although in the final catastrophe these organs are often chiefly at fault. Primarily it is a disease of the circulation, in which the brain and kidneys, acting, as it were, as end-organs, first manifest symptoms." This is important in considering the early symptoms in high-pressure cases. The kidneys are insensitive organs, rarely giving rise to pain, intermittent in their manifestations, and entirely removed from direct observation; hence renal disease may reach a grave stage before it becomes a matter of consciousness. On the other hand, the brain, as the seat of consciousness, is highly sensitive to any interference with its functions. Inasmuch as the retinal arteries, like those of the cerebral and renal cortex, are end-arteries, it is a not infrequent occurrence that beginning arteriosclerotic changes in the carotid circulation show themselves very early in disease of the retinal circulation. It is altogether probable that changes similar to those in the retinal vessels are going on in the end-arteries of the cerebral cortex, as claimed by numerous investigators, but this parallel has not yet been worked out to a finality.

Of the three important end-organs, the kidney, the brain, and the eye, the latter is the only one affording opportunity of study of the circulation at first hand. The ophthalmoscope offers evidence of peculiar value, in that the arterial and venous circulation is not only revealed to our gaze, but is shown to us under a magnification of from 12 to 14 diameters. The ophthalmoscope thus becomes a low-power hand microscope, and properly used, is of infinite value. The changes in the retinal circulation produced by arteriosclerosis are various.

Alleman (Amer. Med., vol. vii) arranges them in four groups:—

1. In the first group no organic lesion is discoverable, the important finding being a tortuosity of the smaller retinal vessels and of their terminal twigs.

2. In this group, there is added more or less bending of the vessels at the crossings.

3. In this group some evidence of organic change in the vascular walls can be made out. Pressure phenomena are more pronounced, also obscuration of the under by the overlying vessels. Miliary hæmorrhages may at times be seen.

4. In this group are included all cases presenting advanced vascular disease, such as hæmorrhagic, diabetic, and albuminuric retinitis, falling into three types: (*a*) the hæmorrhagic; (*b*) the degenerative; (*c*) the active inflammatory.

Frost (Atlas of Ophthalmoscopy) bases his diagnosis on changes in the width and color of the blood-column, in the shape of the vessel, in the breadth and brilliancy of the light-streak, visible and even opaque vessel-walls and lymph-sheaths, and small retinal hæmorrhages.

Mr. Gunn (Ophthalmic Review, 1898), who was one of the first to emphasize the importance of studying these changes, lays stress on:—

1. Alterations in the course, caliber, size, and breadth of the retinal arteries.

2. Alterations in the reflections and translucency of the walls of the arteries.

3. Alterations in the veins exactly as they occur in the arteries, to which must be added indentation of the vein when crossed by an artery.

It is the belief of de Schweinitz that fine corkscrew tortuosity of the small macular vessels and a brick-red suffusion of the nerve-heads are among the very earliest signs of arteriosclerosis, even before the stiffening of the arteries and veins occurs. This belief has been borne out by the writer's own experience.

That age does not play the vital part in this process that was once thought is plainly shown by Alleman's 40 cases, in 15 of which the patients were 30 years of age and under. It is also worthy of note here that in Alleman's whole series of cases the one constant abnormality, the condition he always found associated with retinovascular anomalies, was some disturbance of metabolism, evidenced in the large majority of cases by diminution in the elimination of urea.

As far as retinal angiosclerosis is concerned, only small vessels are

involved, so that the grosser changes in the media and adventitia which occur in the larger vessels of the body do not come under discussion here. The process in all small vessels is characterized by proliferation of the intimal endothelium and formation of connective tissue. Gradual increase in the elastic tissue is a continuous process, which commences in the newborn and goes on through life, whether true angiosclerosis intervenes or not (Hertel); it is the irregularity both in distribution and type of the tissue which is indicative of disease. The following cases are submitted in evidence:—

CASE I.—M. L., male, aged 58, stockman in a furniture factory, came to my service at the Samaritan Hospital, January 3, 1907, stating that two months previously, while walking along a railroad track, he was obliged to jump suddenly for his life. He fell on an adjoining gravel-bank and struck rather heavily on his occiput. He claims that since that time he has not been so well. He stated that he was in fair general health, and his appearance indicated it, as he was fairly well-nourished and developed. He admitted having some headache and postural vertigo occasionally, that his limbs grew tired easily, and that he felt he was getting old. This man had worked on a farm up to his thirty-fifth year. For the last twenty-three years he has lived in Philadelphia, doing light indoor work. He has never smoked nor drank, nor used coffee.

His vision was R. $^5/_{22}$; L. $^5/_{15}$. With his correction for distance it was $^5/_6$ in each eye. The anterior ocular segment was normal, there was no disturbance in his muscle-balance, and his visual fields presented no abnormality. The ophthalmoscope showed in the right eye a brick-red nerve-head, rather poorly defined. The macular arteries were tortuous on and near the disc, and the inferior more than the superior veins showed pressure and uneven caliber where crossed by the arteries. Indeed, the inferior veins were each at one place almost put out of commission by the overlying sclerosed artery. In the left eye the details of the right eye ground were repeated, and there was an area of localized œdema over the inferior temporal vein just below the disc, obscuring the accompanying artery for one-half disc diameter. The lymph-sheaths in this eye-ground were terrifically engorged. The patient was referred to Dr. Samuel Wolfe, his general medical adviser, who, with Dr. Harry Duncan, sent the following report:—

Urinalysis.—No sediment; pale greenish color; one quart for 24 hours; albumen, positive; no large amount, but decided reaction; no sugar; sp. gr., 1020; acid; decided indican; urea, 2.3 per cent.; no bile; no diazo. Microscopic: many hyaline and granular casts; a few leucocytes.

The blood-report was as follows: hæmoglobin, 80; color, index 1;

erythrocytes, 4,000,000, good color, size, and shape; leucocytes, 8800. No plasmodia; no widal; no bacteria. Coagulation time, 2.20. Blood-pressure: systolic, 220; diastolic, 190. The sphygmogram shows that the left ventricle empties slowly, therefore the upstroke is slanting; summit broad, and signs of high tension are present.

On February 26, 1907 (seven weeks later) his blood-pressure was, systolic, 210; diastolic, 160; and coagulation time, 2.45.

His urine showed a sp. gr. of 1010. There was about $^1/_2$ per cent. of albumin, no sugar, and 1.8 per cent. of urea; also a few hyaline and granular casts.

The sphygmographic tracing is practically the same as that of January 6, 1907.

March 19, 1907, I have just been informed that the patient has been stricken with apoplexy.

Case II.—December 11, 1906. A. A., aged 39; male; Russian Hebrew, married; mattress-maker. Father is living and healthy. Patient claims that his mother died at fifty, of a disease producing the same symptoms he now complains of, but not until after she had become blind and then insane. The only disease of childhood the patient recalls is rheumatism, which he had at thirteen years, without any recurrence. Venereal history is negative. Patient does not smoke or drink. About fourteen months ago he began to notice headaches and failing sight. He has been treated constantly ever since at one of our best ophthalmic clinics. The vision recorded on the back of his clinic card on December 1, 1905, was R. $^5/_{40}$; L. $^5/_{20}$. In spite of the treatment, the sight steadily failed. Two weeks ago he sought advice at another large eye-clinic, and was told that he had optic-nerve degeneration and that nothing gave him any hope but the high-frequency electric current, and that even that promised very little, but they would be glad to give him whatever benefit there might accrue from it if he chose. He returned to his general medical adviser, who sent him to me on December 8, 1906. The patient was only fairly well nourished, of a melancholic temperament and poor physical development. The superficial circulation gave no evidence of vascular sclerosis. His vision was R. $^3/_{60}$; L. $^1/_{60}$. The pupils were 5 millimeters in diameter and reacted $1^1/_2$ millimeter in diffuse daylight. The knee-jerks were normal. The ophthalmoscope showed whitish nerve-heads of fairly clear-cut outline; much filled in; the veins were rather tortuous, especially the small ones and particularly at their terminals; the macular arteries were very wavy. The light-streak on the arteries was diminished in brilliancy and the arteries much diminished in caliber; the inferior and superior veins

showed pressure at the crossings with the arteries, and the walls of the inferior temporal artery of the right eye showed thickening. The nerve-heads were those of optic atrophy, secondary to a retrobulbar process.

The patient was sent to the Samaritan Hospital for further study and treatment. Dr. Duncan's urinalysis showed no sediment; sp. gr., 1022; reaction, acid; color and amount, normal; no albumin, no sugar; no indican, bile, nor diazo; urea, 1.9 per cent. Microscopically, negative.

The blood-analysis by Dr. Duncan revealed hæmoglobin, 100; erythrocytes, 6,100,000; leucocytes, 15,000. No plasmodium; no widal; no bacteria. Coagulation time, 6.30. Blood-pressure: systolic, 150; diastolic, 125. The sphygmographic tracing taken at this time showed a normal pulse, save for a slight irregularity in the length of the diastole. The heart and general circulation were pronounced normal.

As a last resort the patient was sweated heavily once a day for two weeks with pilocarpine hypodermically, and once daily strychnia nitrate was used in increasing doses under the skin. At the end of a fortnight his vision had risen in the right eye from $^{3}/_{60}$ to $^{5}/_{10}$, and in the left eye from $^{1}/_{60}$ to $^{3}/_{60}$. His blood-pressure was now (Dr. Duncan) systolic, 110; diastolic, 85; the coagulation time, 2.45, as against the 6.30 of two weeks before.

To-day (March 1, 1907—two months later) his vision in the right eye is $^{5}/_{9}$, and in the left eye $^{4}/_{60}$. He has had 5 grains of K. I. *t.i.d.* for two months.

It seems difficult to account for the arteriosclerosis in this case, and equally difficult to explain his retrobulbar neuritis and consecutive optic atrophy, as there was no findable toxic or general cause for it. A possible explanation is that of sclerosis of the vessels in the head of the nerve producing pressure and lowered blood-supply to the nerve-tissue.

Case III.—August 14, 1906. Mrs. E. S., aged 50, comes, saying that for the last week or so she has been having some malaise, vertigo, and dull headache. For a year or two past she has experienced much slight transient vertigo, and particularly postural vertigo. Patient reads and sews very little, indeed uses her eyes practically not at all. Her physician informs me that she has been a heavy chronic imbiber for years, and that she has at times copious nose-bleed. She has passed her menopause, and is a woman of plethoric habit, nervous temperament, good complexion, and looks as though she overfeeds and underexercises. She states that three evenings ago she was troubled with fortification lightning-phosphenes before both eyes, and her vision was quite cloudy for a few minutes. There was no pain. She was wearing a 1.00 C. axis 180° in both eyes, with which her vision was $^{5}/_{12}$ in

each eye. Both eyes presented a normal anterior ocular segment. The pupils were a trifle irregular, but normal in size and reaction in diffuse daylight and in the dark room. Exophoria, 5°. The superficial vessels gave no evidence of arteriosclerosis.

In the right eye-ground the disc was a dusky red, of poor outline; the arteries were small, a trifle irregular, with somewhat of the silver wire effect; the veins broad and tortuous, irregular, hooped over the arteries, or badly indented by them. In the left eye-ground the same conditions obtained; the macular arteries were corkscrewed, and there was a tiny needle-like hæmorrhage in the fiber layer of the retina one disc diameter down and in from the disc.

She was referred back to her family physician, who, after careful examination, pronounced the urine normal: That was in August, 1906. Within the last week, by request of the family physician and myself, Dr. Duncan went over her circulation and blood and urine, and reports as follows:—

Urine: Sp. gr., 1018, acid; a very slight trace of albumin; no sugar; small amount of indican; 2.1 per cent. urea; no bile; no diazo reaction; a very few hyaline and granular casts. The blood and circulation examination revealed hæmoglobin, 90 per cent.; color-index, 1.1; erythrocytes, 4,000,000, irregular of outline; leucocytes, 8600; no plasmodium; no widal; no bacteria; coagulation time, 5.00, as against the normal 2.45.

Blood-pressure: systolic, 250 (100-140 normal); diastolic, 232 (80-90 normal). Dr. Duncan comments in his report on this last finding of 232 for diastolic pressure, but he states that the readings were taken repeatedly, and there seems to be no doubt but that this reading is correct.

The woman has been warned of her condition, but she is one of those superbly indifferent persons who proposes to eat, drink, and make merry to the last.

Case IV.—For the following full notes of this case I am indebted to Dr. J. W. McConnell, who kindly referred the case to me, July 13, 1906. J. C. P., aged 54; married; carpenter; stopped work April 26, 1906, because of cough. For two weeks previous had languor, pain in bones, night cough, night sweats, loss of flesh, and passed very little urine. Gave history of one or two convulsive attacks, said to have been uræmic. Formerly suffered with vertigo, severe headaches, anorexia, and constipation. Malaria years ago.

Patient was a fairly well nourished man of huge frame, pasty complexion, and generally weak. His station was poor, swaying slightly increased on closing eyes; gait normal.

Heart: Displaced downwards; aortic first sound not true; second markedly accentuated. Mitral first, imperfect; second, accentuated and duplicated. Pulmonic second, accentuated.

Pulse: High tension. Not compressible.

Lungs: Right, high-pitched rough vesicular murmur; large moist râles at base, increased vocal resonance. Left, normal.

Liver, stomach, bowels, and spleen, negative.

Kidneys: Albumin in large quantity; granular and epithelial casts; sp. gr., 1012. This was in the middle of July.

In the last week of August he had an auditory aura, followed by a convulsion with unconsciousness, tongue-biting and involuntary urination, and finally stupor and headache. He was taken to one of our prominent hospitals, where a diagnosis of acute indigestion was made out. A week later, because of persistent occipital headache, vertigo, nausea and vomiting (sometimes projectile), somnolence, and some disturbance in vision, he was sent to me by Dr. McConnell, who said there was an unquestionable nephritic element in the case, but he somewhat feared cerebral tumor also. I saw him on September 5, 1906, when his vision was R. $^{5}/_{30}$; L. $^{5}/_{22}$. Corrected as well as could be, it was R. $^{5}/_{9}$ partly; L. $^{5}/_{9}$. The right pupil was $4 \times 4^{1}/_{2}$ millimeters, irregular in contour, and 1 millimeter less in reaction than its fellow, which was 4 millimeters and also a trifle irregular. The visual fields were negative, save for a small paracentral scotoma in the left field. There was an exophoria of 4°. The right vitreous was granular; the nerve-head dusky red, poorly outlined. The arteries showed a thin blood-column. The walls were thickened, the veins uneven and indented. The small peripheral veins were very tortuous. The left eye-ground presented practically the same picture, with the addition of a small broom-shaped hæmorrhage beginning at the disc edge and reaching out temporally in the fiber layer of the retina for one-half disc diameter. It was very fine and feathery. As I said in my letter to Dr. McConnell, they were the changes that frequently forerun the high-grade changes and active inflammation so often seen in the late stages of renal disease.

October 3, 1906.—Some better. Urine: albumin; sp. gr., 1009; 24 hours' quantity, 60 fl. ozs.

January 7, 1907.—After an acute cold, examination shows laryngotrachitis; slight weakness left side, lower face, arm and leg. Reflexes increased; no ankle clonus; Babinski sign present.

January 15, 1907.—Apoplectiform attack. Left hæmiplegia; eyes conjugate deviation to right; no hæmianopsia. Later he had a right-sided attack, and a little later a third left-sided attack killed him.

Autopsy.—Chronic interstitial nephritis, cardiac hypertrophy and dilatation, general arteriosclerosis. In the brain were many thrombotic arteries, and many softened areas in pons and medulla. Spinal cord not examined.

The changes in this man's eye-grounds looked as though they might easily be of a year's duration, or even more, as the arterial walls were plainly thickened where they crossed the veins, as evidenced by the thin, pale-yellowish line on each side of the arterial blood-column as the vein was crossed. It would have been of great interest and value if this man's eye-grounds had been gone over a year or two before he began to develop general symptoms.

In contrast to the foregoing case, which represents the later phases of retinal angiosclerosis, the following cases are submitted:—

Case I.—A.G.B., aged 48; married; a prosperous broker; was referred to me in June, 1904, by his medical adviser, who stated that there was evidence, after many careful urinalyses, of low-grade organic renal disease. He wished to know whether there were any ophthalmoscopic signs of such disorder. The patient ate excessively, smoked and drank excessively, and confessed to stepping outside his marital vows. The vision was $^{5}/_{6}$ in each eye. The eye-grounds revealed no other lesion than well-marked pressure at the crossings in the periphery of both eye-grounds (principally inferiorly), with some tortuosity in the veins and one or two supernumerary, much twisted, macular arteries on and near the disc. The nerve-heads were of fair hue and outline. The fundi evidenced no other lesion whatever. The patient was cautioned as to his condition, and has since, by an exemplary life, remained a well, active, busy man.

Case II.—Concerns a married woman of 29, of fairly good health, who came for a change of glasses. She was wearing a low compound + sphere that had not much helped her headache, photophobia, vertigo, and accommodative failure. Within four years she had borne three children, the youngest being now 18 months old. Up to eight months ago she was somewhat nervous, but otherwise in fine health. Since then she has lost 25 pounds in weight, probably because of acute domestic infelicity.

The eyes were normal anteriorly, the vision in each being $^{5}/_{12}$. Under a mydriatic the refraction was shown to be a — 1.00 sph. in each eye, with a doubtful — 0.25 C., 180°, giving full vision. The muscle-balance was normal. The perimeter showed concentric contraction of both form and color fields, but no color inversions. With the ophthalmoscope both vitreous humors were seen to be full of fine, thready opacities. The nerve-heads were fluffy of outline, especially nasally, and the choroids and retina congested throughout, without anything wrong in the maculæ other than a rather gran-

ular condition. In both eyes, moreover, the arteries were a trifle uneven in caliber, somewhat lighter in color than they should have been, and indented the veins more or less wherever they crossed them. The latter were broader and more tortuous than normal. In each eye there were one or two very small, much twisted macular arteries.

The patient was referred to Dr. R. Max Goepp, who reported as follows: "The heart-action is rapid, clear, and forcible, and without murmurs. The pulse is rapid and variable, averaging about 104. The rate is not increased by exertion. The blood-pressure with Stanton's instrument is 128 millimeters (systolic). The pulse-tracing (pressure of 3 ounces) shows low tension, rapid pulse, somewhat irregular in time and volume. Sphygmogram No. 2 was taken immediately after the first without rewinding the spring, and in it you see the low-tension characteristics intensified. Clinically, it is impossible to diagnose arteriosclerosis in this case. The cardiovascular condition is one of neurosis without signs of structural change."

The urinalysis (made by Dr. Duncan) showed a greenish-pale urine, of neutral reaction, sp. gr. of 1010, a very slight trace of albumin, no sugar, a small amount of indican, urea only 55 per cent. of what it should be; microscopically, some squamous epithelium and a few leucocytes.

In this, then, the only signs of beginning arteriosclerosis to be found anywhere were in the eye-grounds. If this state of affairs should show itself often, the value of the ophthalmoscope in the careful study of the eye-grounds for signs of oncoming arteriosclerosis could hardly be overestimated.

These cases fall more in Alleman's second than in his third group. That is to say, that they more or less represent beginning arteriosclerosis—the stage in which much may be done for the patient. If the case has gone on to marked stiffening of the vessels with organic changes in the intima and perivascular spaces, it is doubtful whether treatment will effect sufficient change in the circulation to be of any avail.

In conclusion, the following observations are thought to be well inside the facts concerning retinal angiosclerosis:—

1. Changes in the retinal vessels point not only to probable arteriosclerosis in the cerebral vessels, but are also related to the very early stages of chronic Bright's disease, as has been often urged by many writers.

2. They are highly important from the diagnostic viewpoint, because, as has been insisted on by Gunn, Nettleship, Frost, de Schweinitz, and others, they frequently forerun by a year or two the usual degenerative or toxic retinitis.

3. The ordinary ophthalmologist does not carry his observation quite far

enough. Instead of being content with careful inspection of the nerve-head and then sweeping the area of illumination over the outlying fundus and into the macular region, he should also inspect the periphery of the small veins and arteries, and minutely study the vessels at their crossings in every case that is in the least way suspicious.

4. If he finds anything at all suspicious in the vessels, he should see that study is made of the condition of the pulse, the heart-sounds, the tracings of the sphygmograph, and the readings of the sphygmomanometer; for, as has been said, to the four indices of persisting high arterial tension noted above, "it would seem, on the authority of the studies made by Gunn, de Schweinitz, Preston, Nettleship, Thompson, Friedenwald, Hirschberg, Sachemann, Bull, Alleman, Greenwood, Woodruff, and others, that the ophthalmoscopic signs herein detailed should be added as a fifth index.

If there is an over-respect in these days for so-called scientific work (wrongly limiting the term to that which is in some way connected with a laboratory and apparatus), it is because the clinical workers have more or less yielded the field of medicine entirely to the so-called research workers and the laboratory men. The clinician and the laboratory men must work shoulder to shoulder; then will there be no halt in the progress of the art of medicine as it bears upon the wise management of the individual during the course of his life."

1212 Spruce Street.

THE ETIOLOGY AND PATHOLOGY OF ATHEROMA AND ARTERIOSCLEROSIS.

By Wm. EGBERT ROBERTSON, M.D.

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Vascular changes may be grouped broadly into physiologic and pathologic, the former being essentially an involution process, common to advanced periods of life. Though degenerative, it is a constant concomitant of late adult life, and, being in a sense a compensatory process, justifies the license taken in speaking of it as physiologic. Of gradual onset, it is slowly progressive, and is appreciable, in the great majority of people, after fifty years of age. Its degree, however, depends mainly on two factors, viz., heredity, and the amount of strain or wear and tear to which any given individual has been exposed. As to heredity, it is needless to dwell on the frequency with which we meet with families presenting a special tendency to apoplexy or Bright's disease of vascular origin, and in such families the lesions assume a most

pronounced type and are prone to develop earlier than is the rule. It is in the strictly pathologic type, though, that heredity assumes the chief rôle. To this class belong the cases of progeria, described by Hastings Gilford some years ago. The affected individual is small of stature, presenting more or less well-marked infantilism with various senile changes, as dryness and wrinkling of the skin, loss of subcutaneous fat, loss of hair, and extensive vascular degeneration with secondary visceral changes. Thus, at 9 or 10 years of age, actual senility may be present. Such extreme cases, though, are rare. More frequently we meet with young adults of 25 to 35, or even somewhat older, in whom well-marked vascular lesions have developed—essentially hereditary cases, in the sense that the quality of their vessels is such as to predispose to early degeneration. Such cases are apt to present themselves after having unsuccessfully attempted to obtain life insurance. As a rule, they have a vascular renal lesion, *i.e.*, an interstitial nephritis. This type always has high blood-pressure when the heart is not impaired for any reason; but in the senile or involution form, the blood-pressure is often below normal and rarely very much above, as the heart-muscle has usually undergone degeneration, due in part to the natural processes of decay, and in part to disease of the coronaries, thus directly impairing the heart-muscle. These cases described above, occurring in young adults, may occasionally have a medico-legal aspect. One such case came to autopsy when I was pathologist to the Episcopal Hospital. A young man, whose exact age I do not recall, but in the early twenties, up to the onset of his fatal illness seemingly in good health, became increasingly somnolent, then comatose, without apparent cause, and died without regaining consciousness. It was noted that the radials and temporal arteries were exceedingly rigid, thick, and tortuous. The necropsy revealed general arteriosclerosis, with small, exceedingly high-grade, red, granular kidneys. It was at first thought that this man had been foully dealt with or that he had taken some poison. In another group of cases high blood-pressure—hypertension—occurs without apparent cause; it is met with from the 35th to 45th years, without cardiac or renal disease. After some time, however, cardiac hypertrophy and renal disease supervene. Be the cause what it may, Clifford Albutt regards these as primarily high-tension cases, and not secondary to renal or vascular disease.

A potent factor in producing vascular degeneration is severe physical or mental strain. Violent muscular effort, whether in the circus performer or in heavy laboring work, inevitably leads to widespread blood-vessel changes and cardiac hypertrophy, and this latter, plus increasing peripheral resistance, continues to increase blood-pressure and further invite vessel changes. As to mental strain, it is well known to those making blood-pressure observations,

that fright or mental excitation will increase blood-pressure, often short-lived, as is the case where something alarms the patient during the taking of the blood-pressure; but it is equally conceivable that in mental disturbances operating over a long period, as is the case in brokers, financiers, or business men with large interests, permanent harm will follow. Now, it is in just this class of cases that we meet with chronic hypertension; later, renal disease, cardiac hypertrophy, and the various phenomena of cerebral sclerosis. In this class, too, we find overindulgence in food, though this alone may suffice to produce vascular degeneration, probably more often than is generally supposed. Syphilis, too, is a common cause, though the lesion is more apt to be localized than diffuse; certainly, at least the most advanced changes are found in the thoracic aorta, and especially in the root and arch, as the frequency of aneurism at this site attests. Next to this the cerebral vessels and probably the vessels of the cord are affected. More diffuse, widespread vascular lesions may result, but they are always late and are not particularly common.

Various acute infectious diseases may produce vascular changes, leading eventually to arteriosclerosis—especially typhoid fever, according to Thayer. Gout and lead indubitably lead to arterial disease. Alcohol, I believe with Cabot, has been much overrated as a predisposing cause. All of the chronic potators I have seen, when not compelled to work hard, have had pulses of large volume, rather soft and without appreciable change in the vessel-wall, as far as thickening is concerned. While Bright's disease invariably leads to vascular disease, it is now equally well recognized that vascular disease may give rise to Bright's disease—in other words, that either may be primary.

Before describing the vascular lesions previously referred to, it seems to me necessary to fix clearly in mind just what is meant by the terms atheroma and arteriosclerosis. Nowadays, they are used interchangeably, the general conception being that they are synonymous. Strictly speaking. however, atheroma implies a softening process, gruel-like, as the word indicates, while arteriosclerosis is the exact antithesis, viz., a hardening. Further, either condition may exist alone, though, as a rule, atheroma occurs rather late in the course of arteriosclerosis. It is convenient, however, to have a word which will convey the idea of vascular change as we meet it clinically, and in this sense the word atheroma is almost universally employed.

We will first consider the pathology of arteriosclerosis, as it is usually the initial and most widespread lesion. Thoma describes it as primary, when local arterial changes lead to dilatation with secondary connective-tissue growth; or secondary, when more diffuse arterial changes result from increased peripheral resistance. Thoma has shown that a certain normal relationship exists between the contained volume of blood and the arterial wall, and that

the very first change which leads to arterial disease is vascular relaxation—dilatation. To compensate for this, connective-tissue proliferates, and this, by lessening the elasticity of the vessels, manifestly increases peripheral resistance, which in turn raises the blood-pressure; further dilatation of the arteries results, particularly the smaller vessels, and additional connective-tissue proliferation, and thus, as it were, the vicious cycle is continuous. Arteriosclerosis may be nodular or diffuse. The nodular or circumscribed form begins as a perivascular infiltration about the vasa vasorum, a round-celled infiltration beginning in the media and adventitia, a true inflammatory process. In consequence of lowered nutrition of the vessel-wall, dilatation follows, with compensatory subendothelial connective-tissue proliferation. Diffuse arteriosclerosis is that form of arterial change described as occurring in early or midadult life. As in the circumscribed form, the media is first involved, hyaline, fatty, even necrotic changes eventuating with subendothelial proliferation. In the smaller vessels, notably those of the kidney, the media is often in large part converted into hyaline material. The muscle layer first, then the elastic lamina undergoes destruction, as is the case in the majority of vascular lesions. It is not inappropriate at this stage to refer to a classical work, epoch-making in its day, as it served to focus the attention of all medical men on the subject, and that is, arteriocapillary fibrosis, described by Gull and Sutton, in 1872. Up to that time it was generally assumed that in chronic Bright's disease the kidney was primarily affected, and that in consequence of the resultant cachexia, chronic changes were brought about in other organs. Gull and Sutton showed that in many instances the lesion is primarily in the blood-vessels; and that the kidneys and other internal organs, including the brain, secondarily undergo chronic changes. Of course, this is now a well-recognized fact, but the point I wish to emphasize is, that most writers of to-day, in describing the work of Gull and Sutton, speak of arteriocapillary fibrosis as an endarteritis. Gull and Sutton did not describe it as such, for they distinctly said they "assert only that the morbid changes we have noticed occur chiefly outside the muscular layer." The summary of their findings is as follows:—

"1. That the arterioles throughout the body, in that condition usually called chronic Bright's disease with contracted kidney, are more or less altered.

"2. That this alteration is due to a 'hyaline-fibroid' formation in the walls of the minute arteries, and a 'hyaline-granular' change in the corresponding capillaries.

"3. That this change occurs chiefly outside the muscular layer, but also in the tunica intima of some arterioles.

"4. That the degree in which the affected vessels are altered and the

extent to which the morbid change is diffused over the vascular system of the different organs, vary much in different cases.

"5. That the muscular layer of the affected vessels is often atrophied in a variable degree."

I quote the above partly because of its great historic interest, and partly to show that their conception of the vascular change was rather that of a peri than an endarteritis. Atheroma, as has been said, is in its early stages certainly a softening process, a necrosis; but by common consent it has come to be regarded as a hardening of the vessels, due to calcareous infiltration. The reason for this latter view is probably due to the fact that post-mortem the originally atheromatous areas present a variety of changes, of which the calcareous is most evident to the unaided eye, time having been given, as a rule, for these secondary degenerations and infiltrations to occur, and even more likely, because clinically we are unable to recognize arterial change until it is well advanced. Atheroma is extremely common in the aorta, both abdominal and thoracic, and in its larger branches. It begins in the media, which undergoes fatty degeneration and necrosis, a finely granular detritus resulting, which may break through the intima into the lumen of the vessel, an atheromatous ulcer resulting; or hyaline, and later calcareous, changes may take place in the media, and calcareous plates, by destruction of the intima, then come to occupy the base or immediate surroundings of an atheromatous ulcer being directly bathed by the circulating blood. The rough surface exposed then favors the deposition of fibrin. Many of the smaller atheromatous areas become the seat of attempted reparative processes, and connective tissue—scar-tissue—takes their place.

To sum up, then, atheroma and arteriosclerosis are, histologically, separate entities, the former being met in its most marked forms as a late accompaniment of the latter, though it is very often seen as small plaques in the aorta, pulmonary artery, and mesenteric vessels, when no other gross vascular lesion is appreciable. Clinically, we are unable to differentiate them, however, though the younger the individual, the more apt we are, given vascular disease, to be dealing with diffuse meso-endarteritis, *i.e.*, diffuse arteriosclerosis.

REMARKS MADE IN DISCUSSION OF SYMPOSIUM ON "ARTERIOSCLEROSIS AND LIFE EXAMINATIONS."

DR. A. B. HIRSH: It will doubtless be a revelation to most medical men engaged in examination of applicants for life insurance to know of the exact status of the ophthalmoscope for our own especial purpose, as evidenced by

the papers, with citation of clinical cases, etc., given this evening. And it is indeed timely that such facts should have been placed before this representative organization, with the object in view of further missionary work in the good cause of obtaining accurate knowledge of the physical condition of those whom we are called on to examine.

The average medical man engaged in life insurance investigations has, until now, had but a hazy idea of the value of the ophthalmoscope in this particular line of work. The accepted opinion has heretofore been that such a highly specialized instrument was only of definite value for refractive and, to a certain extent, diagnostic purposes; furthermore, that its successful use (very correctly) implied a degree of training in ophthalmology quite impossible to the practitioner whose time was taken up with the manifold exigencies of general or insurance work. As a consequence of this settled view (few or no ophthalmologists being engaged in making life insurance examinations), this instrument of precision has received no consideration from either life insurance companies or their medical officials. It is, however, quite impossible to listen to the facts given us to-night without foreseeing its ultimate use in life insurance examinations. The liability to misinterpretation of its findings by the average examiner or by physicians unattached to an extensive eye service at one of the hospitals makes more likely the probability that the local offices of each company will in the future decide on some particular ophthalmologist, whose tests of applicants for policies will supplement those of the "field" examiner. This is my view of the matter at this time.

As a means of hastening this employment of the ophthalmoscope for our especial purposes, I would like to suggest to the speakers of the evening that they elaborate the notes just read us into formal papers for delivery before the American Association of Medical Directors or some similar section of the American Medical Association, at its coming meeting in Atlantic City. In this way the great importance of the subject will be brought directly home to the various life insurance companies.

DR. T. J. ELLINGER: A few words in regard to the very interesting subject we are considering this evening. . . . It has been to me very instructive to listen to Doctor Robertson's lucid and instructive resumé of the pathology of arterial degeneration. It is important that we should be thoroughly acquainted with the causes which lead to the pathological changes, and to know when the very earliest changes take place in any of the organs. As general practitioners, this is most important to our patients. It is equally important to us as medical examiners for life insurance companies that we should be able to recognize a diseased condition or pathological change which may take place in

any organs of the body. As examiners, we represent large financial institutions, whose future stability depends on the thoroughness of our selections. It is our duty to note pathological changes long before the applicant is cognizant of such conditions; long before the family physician has been consulted to express an opinion on some morbid change which, to the applicant, may appear trivial. But we, as thoroughly equipped examiners, must recognize changes which we know, from clinical experience, show a beginning of the end and consequently are cases not to be recommended as desirable first-class risks.

To assist us in making it possible to recognize these changes in arterial degeneration, I am sure we are all very thankful to Professor Judson Daland for his able, clear, and instructive paper this evening. Taking this paper with Professor Wendell Reber's paper and his lantern-slides, which show us the arteries in the eye as they gradually undergo pathological changes, I am sure we are all thankful to these gentlemen for the many points of interest which they have presented.

As we cannot all be ophthalmologists, nor can we carry about with us a load of instruments of precision, it is our duty to follow Professor Daland's advice, "Keep our fingers in training, so that by the delicacy of our touch we can recognize the difference of blood-pressure, and especially the gradual changes which are taking place in the arteries which can be readily handled, touched, or seen, and thus become perfect in appreciating these arterial changes." It is well to again note what Professor Daland tells us, "Do the same thing always in the same way, etc., etc., whenever examining the radials." Always examine both radials. From personal experience I say this is important. I have had the misfortune of passing a man on examining his left radial, and another examiner found his right radial like a whipcord. This is unpleasant to learn from the home office.

It is a proven fact that deaths from circulatory diseases have become more frequent in the past twenty-five years. The percentage of deaths has gone up, and the tables must be revised.

Clinicians recognize this every day. It is undoubtedly a fact that the strain of modern life, the assuming of many responsible positions in large corporations by young men, has been a direct cause of the arterial degeneration which we meet so very often to-day, among the young men who are classified as "captains of industry." The mental strain, worry, bother, and excesses incident to their work are gradually sapping the strength from the heart and the pipes which carry the life-giving fluid through the body.

One point which I wish to bring out is this: as Professor Reber has shown us on the screen how tortuous the retinal arteries become when arterial

changes commence, even so this same condition may nearly always be found in the course of the temporal artery, and the tortuous condition of this artery should always put an examiner on his guard while proceeding with his closer examination. Dilated venals is another danger signal which the examiner should take note of, particularly when found in a young person. I have often noted that in nearly all cases of arterial degeneration there exists a peculiar and extreme pallor, and have frequently detected a rigid radial and *no* cardiac lesion. It is my opinion that no case which shows the slightest sign of arterial sclerosis should be recommended as a first-class risk. If you should be examining for a sub-standard company, then the case *may* be considered.

Special Article

EPILEPTIC SEIZURES; THEIR CAUSE AND TREATMENT.

By C. E. de M. SAJOUS, M.D.

PHILADELPHIA.

(Concluded from March issue.)

Text-books on the practice of medicine, including the "last editions," continue, regardless of the admonitions of men of large experience to the contrary, to advocate the use of bromides as a curative measure. Percy Bryant,[14] ten years ago, emphasized the fact that the bromides had added another disease in many epileptics, namely, bromism. Spratling,[15] as the result of a close study of several thousand cases at the Craig Colony, concluded that "we must not only regard the bromides as powerless to cure epilepsy," but also "as capable of doing as much harm as they do good, as they are ordinarily administered." F. Peterson[16] has reported eleven cases in which the number of attacks was greatly reduced by withdrawal or marked reduction of the drug: "in some cases," says this neurologist, "the improvement is startling."

In the light of the evidence I have submitted in the foregoing pages, the untoward effects of the bromides are readily accounted for. The seizures are due to the presence in the blood of toxic waste products which, by powerfully exciting the vasomotor center, cause an intense rise of vascular tension and violent hyperæmia of the cortex. The logical indication is to prevent the formation of these toxic wastes by measures that enhance the oxidation processes through which they are converted into harmless, readily eliminated end-products. Now, the bromides produce precisely the opposite effect:

Wood[17] states that "even small doses of bromide are directly depressant to the circulation." Again: "In mammals the bromide acts very much as on frogs, inducing progressive paralysis, depression of temperature, and death by asphyxia when given in small poisonous doses." Asphyxia here clearly points to the drug as one that impairs oxidation, a fact emphasized by the lowered temperature. Chloral, also used considerably in epilepsy, is fully as harmful; Richardson, Hammerstein, and others have found that it could reduce the temperature very greatly—6° C. (10.8° F.), according to the last-named observer.

Of major importance in this connection is the fact that the bromides paralyze a mechanism which, from my viewpoint, is the patient's sheet-anchor, viz., the adrenal system. This action is sufficiently marked, in some instances, to cause bronzing similar to that observed in Addison's disease. Bourneville and Chapotin,[18] for instance, refer to Echeverria,[19] who witnessed a case in which the brow and neck "were markedly pigmented brown," and to others reported by Voisin; in one of these "the skin of the face was a dark, dirty yellow;" in another it was "covered with bronze patches having no connection with the acne." Inasmuch as we have seen in two preceding numbers of this journal that it is the adrenal secretion which, as I pointed out over four years ago,[20] takes up the oxygen of the air to carry on oxidation (as the albuminous constituent of hæmoglobin) throughout the entire organism, the bromides—chloral as well—inhibit precisely the function which should be activated.

On the whole, it is by preventing the oxidation of the toxic wastes which provoke the fits that these drugs are harmful, and it is obvious that their use, under the delusion that they are curative, can only serve to perpetuate the disease. As shown below, they should be considered only as unavoidable evils to obtund the sensitiveness of the vasomotor center while measures calculated to insure the destruction of the toxic and spasmogenic wastes are being carried out.

The first and foremost indication in the treatment of these cases, however, is the diet. In some of my cases this alone sufficed to reduce the number of paroxysms from several a day to one or two a week, and in one instance to cause their cessation as long as the patient abstained from the use of certain foods and beverages, including coffee and tea. The general principle involved in this connection is that we are dealing mainly with poisons formed during the breaking-down of worn-out living substance, *i.e.*, during katabolism, and that these poisons form owing to insufficiency of those constituents of the blood which carry on katabolism and destroy the toxic wastes. In the majority of cases the food-intake is excessive, and the cellular elements are burdened with detritus which cannot be completely converted into eliminable products.

The blood, therefore, is loaded with substances which irritate the vasomotor center and thus provoke the seizures.

The practical lesson of this principle is obvious, namely, to allow the patient only the quantity of food strictly necessary to the needs of the body. Indeed, neurologists of wide experience have found that the best results are obtained when the food consists mainly of cereals, milk, fruits, and butter. Some include eggs, but others object to them. Meat, if allowed at all, should be strictly limited to the midday meal, and even then in small quantities. Fats, fried foods, and pastry often prove harmful. Stimulants which tend primarily to cause a rise of the blood-pressure, *i.e.*, alcohol, coffee, and tea, should not be allowed. Gastro-intestinal disorders sometimes suffice to awaken the disease. Appropriate treatment, including daily colon-flushing with normal saline solution, have proven curative in such cases. The patient should also be enjoined to drink water freely, in order to facilitate the elimination of wastes.

As to the medicinal treatment, the indications are remedies which, as I have pointed out elsewhere,[21] enhance oxidation, the beneficial effects of thyroid extract in tetany, tetanus, and puerperal eclampsia affording ample proof of their value. Bourneville[22] found that thyroid extract failed to arrest the seizures, and even increased them. But the cause of this is self-evident: he gave full doses, and thus enhanced general metabolism so actively that he increased the production of wastes. Browning,[23] on the other hand, caused the cessation of convulsions in epileptics by giving $^3/_4$ grain (0.05 gm.) doses twice daily. He states that these cases "are due to or associated with disturbances in the general metabolism of the body" and refers to them as "pseudo-epilepsy." All cases of idiopathic epilepsy should be considered in the same light if the term "pseudo-epilepsy" were warranted at all, since, as we have seen, Pierce Clark and others ascribe the disease to "an accumulation of waste-products." Browning's cases were *bona fide* cases of epilepsy, and what they do teach is that small doses of thyroid extract are alone indicated. These, however, as my own observations have shown, must be *very gradually* increased according to the effect on the patient. I usually begin with one grain (0.065 gm.) at each meal, giving a small dose of sodium bromide on retiring at first, if necessary, and gradually reducing the dose, until none is given at all. Some cases are benefited by larger doses of thyroid. Thus, in a case treated by a colleague, under my supervision, the nurse, through a misinterpretation of instructions, doubled the dose; the result was considerable improvement.

Professor Osborne, of Yale,[24] wrote recently: "I have now on my records a number of cases of epilepsy treated successfully with thyroid. My atten-

tion was first drawn to the use of this preparation in epilepsy by several cases occurring in women at the time of the menopause, the attacks showing a suggestive periodicity. In several other cases in young girls at the time of puberty, the attacks showed a periodicity. There being no assignable lesions or injuries in these cases to account for the epileptic attacks, I reasoned that they must be purely toxic, and that this toxæmia was in excess periodically when the patient should have menstruated. Many of these patients had received bromides, and while this postponed or controlled the epileptic attacks, general debility and bromism were appearing. In the young girls I used thyroid as an emmenagogue, with the belief that normal menstruation would prevent the attack of epilepsy. I found that it did. I then used the thyroid in the menopause cases, in some continuously in small doses, and in others a few days a month at a possible menstrual epoch. I found that I could control and prevent the epileptic attacks as well with thyroid as could be done with bromides, and with much better results to the system."

Briefly, the treatment of epilepsy should have as main object, as I was first to point out, in 1903,[21] *to activate the catabolism of spasmogenic wastes through the adrenal system* and to avoid, whenever possible, drugs such as the bromides and chloral, which depress this function. In some instances, the iodides serve a better purpose; the salicylates (or salicin, 5 grains [0.3 gm.] three times daily) are also effective, as Haig, Vincent,[25] and others have shown, but both these agents stimulate the adrenal center and enhance, therefore, the oxidation processes. Such remedies, to keep the blood free of toxic wastes; dietetic measures, to reduce the quantity of such wastes formed; and finally, the free use of water, to insure the rapid elimination with the urine, sweat, etc., of all physiological wastes, constitute a therapeutic triad which soon causes the vasomotor center to lose its irritability, thus preventing the cortical hyperæmia to which the convulsions are due.

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Editorial

DERANGEMENTS OF THE VASOMOTOR EQUILIBRIUM.

The very commendable watchfulness exhibited by the profession in recent years for all forms of menace to constitutional integrity is especially displayed by medical examiners in life insurance companies. Inasmuch as a verdict from these gentlemen is a pretty serious matter, it behooves us not only to be on our guard to detect and label the recognizable beginnings of disaster, but to clearly differentiate between actualities and close resemblances. When arteriosclerosis is definitely established, little can be accomplished in the way of cure, though fortunately our resources are large for amelioration. Huchard has lately called attention to presclerosis,[1] a commendable vigilance, but perhaps rather beyond the capacities of most of us, if to be achieved at all. Preventive medicine is to the highest degree praiseworthy, but too often impossible, more, it may be, by reason of the difficulties of sufficiently early observation, or control of remediative conditions, than of accurate differentiation.

It has been my privilege to secure relief, amounting to cure, in a number of instances where individuals have been under treatment for conditions believed to be arteriosclerosis, the diagnosis being made by clinicians of unquestioned ability. These have proven to be instances of loss of vasomotor equilibrium, producing many of the more graphic phenomena of serious arterial change. Whether the functional condition would have developed into degenerative states it is not my purpose here to inquire. Suffice it to say that they conformed to our conceptions of the symptom-complex ordinarily catalogued as arteriosclerosis, and yet under suitable treatment are to-day, many of them after some years, now well. One of these, a lady then seventy-two years of age, "threatened with apoplexy," mentally confused, of tense radials, feeble myocardium, dicrotic pulse, mitral regurgitant murmur, dyspnœa on slight exertion, etc., is now, at over eighty, among the nimblest members of her family.

Another of over fifty, who for five years had been under treatment for arteriosclerosis, tension headaches, chilly extremities, cyanosis, etc., is now, by her own account, for over a year, perfectly well in all respects—indeed, has survived since then a sharp pneumonia. In lesser degrees many cases might be cited. What were these conditions? Presumably loss of equipose in the vasomotor mechanisms. All of them had had excellent treatment, hygienic,

[1] H. Huchard, "Traitement de la pré sclerose" (Bull. de l'Acad. de Medicine, lxxi No. 3).

dietetic, and medicinal, directed to one or another assumed derangement. The means which proved successful were mainly physiologic, judicious use of heat and cold, reflex stimulation of vasodilation, the best of which seemed mechanical elicitation of vasomotor reflexes through the erector spinæ muscles and the skin of the paravertebral areas.

The point of the story is that we have much yet to learn of vasotonus and the changes which can be rung on this keynote factor in nutrition, in function, especially of that complex entity, the circulatory system. Tissue respiration is a great field for study. The avidity of the cells for oxygen must be met. Toxin elimination is a problem which we have barely begun to solve. Obviously, our chief desideratum is to know more about those regulative mechanisms, the adrenal system, its physiology, its natural history, its prephenomena, than have heretofore engaged the attention of the practitioner. When we have the subject well in hand we shall be in a position to prophesy, to treat, to control a variety of menacings not now practicable.

J. MADISON TAYLOR.

AN INQUIRY INTO THE PHYSIOLOGY OF SUGGESTION.

Suggestion is well known to be curative of psychoses. It is credited with curing, it certainly can ameliorate, a wide array of functional disturbances. Especially does wise suggestion work graphic changes in those mixed conditions, compounded of organic derangements and psychic misinterpretations, which constitute such a large majority of human ailments. The question not clearly determined is: can suggestion alone repair structural lesions? To my mind it probably can do so to a certain degree, but no more. There is reason to believe that a powerful shock, such as a new point of view opened up forcefully to a consciousness suffering from the effects of tone-depression, is capable of exerting not only harmful, but also reparative, effects. Upon the same grounds, along the same lines of cellular adjustment, on which grief, fear, anger overwhelms, even kills, so does hope, gladness, ecstacy rejuvenate. The proof, the physio-pathogeny, is not readily adducible, but it is not impossible. The purpose of this article is to present the possibilities from the standpoint of the physiology and pathogenesis of suggestion as applied to the correction of human derangements.

By "suggestion" we understand the process of eliciting the normal action of those potentialities which reside in the human mind, viz.: the capabilities of the spirit, of that moiety of the "divine fire" which is the essential factor in our being. Since the body may be described as essentially a manifestation of

the spirit, it is obviously wholly dependent for maintenance of its action upon this governing force. Suggestion, or the moulding of the body by impulses generated by the spirit, the volitional forces, may be exerted by stimuli from without or from within. The exciting force may be the dominant volition exercised by another, or emanating from our own inherent, instinctive impulses. Stimulation may be exerted, too, by various agencies foreign to the organism, and they must be reckoned with as modifying or complicating.

The one great avenue of cellular alteration is the vasomotor mechanism. All diseases may be classified as disorders of nerves, since through and by the action of nerve-impulse, especially of the vasomotor mechanisms, are all circulatory changes, all metabolism, regulated. As less or more blood is distributed in proportion to the rate and quality of supply, the conditions of return, so is local or general health sustained.

The dissemination of the "pabulum vitæ" through the plasma is regulated by vasomotor action. Tissue respiration, cellular nutrition, is maintained by a balance between those fundamental mechanisms called the adrenal system.

Whereas there is no testimony yet formulated to show that the adrenal action is directly altered by psychic stimuli, it is, however, well known that the status of the vaso tonus is graphically displayed by such phenomena as flushing, paling, sweating, and the like. Hence, it is reasonable to assume that powerful psychic stimuli are capable of altering metabolism above or below its ordinary excursus. How far this is capable of influencing disease process it may not be feasible yet to determine. It would be an interesting research, and one which the present writer will one day undertake. Meanwhile, the observation is filled with suggestiveness.

J. Madison Taylor.

MARRIAGE REGULATION.

In Re the Senate Marriage License Bill.

(Introduced in the Legislature of Pennsylvania by Mr. Langfitt, of Allegheny, March 11, 1907.)

Since the introduction of the bill providing for the requirement of certificates to the effect that both parties to a proposed marriage are free from disease transmissible to progeny, a number of letters have been written by members of the Legislature inquiring with regard to the utility of such a measure, and suggesting certain objections. Two of these letters covered almost the entire ground. Their arguments are submitted as of possible interest to others in their study of the subject.

1. "Such a bill would drive marrying couples into other States."

2. "Its provisions place autocratic power in the hands of the doctors."

3. "It inflicts unjustifiable embarrassment and inconvenience upon women marrying after the child-bearing period."

4. "It prevents altogether the marriage of women illegitimately pregnant who are also victims of transmissible disease."

5. "It requires an examination that involves expense, and fails to provide funds to meet the same."

The Pennsylvania Society for the Prevention of Social Disease has replied in a formal letter in the hope that not only the aim may be made clear in indorsing the bill introduced by Mr. Langfitt, of Allegheny, but also the reasons that underlie the belief that it will accomplish only good.

"First and very briefly, with regard to your objection that it would drive the marrying couples into other States. It has not done so in South Dakota, nor in Indiana, nor in Michigan; nor does it seem likely to do so in Iowa, where they are even planning to place these diseases on the reportable list. If the women were opposed to the principle we think the result would be as you intimate. They are, however, its strongest advocates. There will be shown you in Harrisburg this week the cordial endorsement of the National and also of the Pennsylvania Congress of Mothers. We have heard no mother speak against it. The question is 'When a woman knows that a man is for crossing the State border to avoid an examination to which she is herself willing to submit, will she marry him; and should she? She knows now that from 50 to 80 per cent. of all abdominal operations upon women are necessitated by one transmissible disease. We think, therefore, we know your answer.

"Secondly, as to placing so much arbitrary power in the hands of the doctors. The ministers have not abused this power. The physicians dread it, and have been brought to contemplating it only by the nape of the neck. The bill, until made far more stringent, will be primarily educational because so many doctors will give the patient the benefit of the doubt. It has always been an argument of the medical profession against such a bill that physicians would not enforce it by conscientious observance. Now that they are willing to make the attempt for the sake of the women and children, we say, do not hold them back.

"Thirdly, we have already stated that the women are unanimously in favor of the bill. They do not find its requirements burdensome nor oppressive. Moreover, an infected woman past the child-bearing period is as infectious to those around her (to her husband among others) as at any period of her transmissible disease.

"Fourthly, we admit that a woman illegitimately pregnant may, indeed, desire to marry him who fathered her child. She should, if the victim of a transmissible disease, be prevented from bearing other diseased or degenerate children; the only method would appear to be the requirement that she be cured before she be allowed to marry.

"Fifthly, the immediate advantage of the examination accrues to mother, father, and child. Individuals unable to bear the expense would have at their command in cities the district physician; in the country, and everywhere, the family physician, who would not refuse gratuitous service.

"Finally, with regard to your suggestion as to the reglementation of prostitutes and houses of prostitution, we would submit that the danger from venereal infection, while imminent in every immoral woman, is far more active and real in the thousands who constitute the clandestine prostitute class, outnumbering the professional prostitutes many times. There are 300,000 of the latter in America. The 'clandestines' can neither be numbered, regulated, examined, nor treated until cured; they will remain THE SOURCE of venereal infection until the world is educated to a knowledge of the fact that a woman who has had intercourse with a diseased man is at once, and in most instances permanently, a source of danger, even if she has received her certificate of health an hour before. Venereal disease in the woman is seldom if ever cured, and in its latent stages is still infectious and contagious. The women and children who are innocent sufferers are to be counted by thousands, and all are dangerous to the community, the more so because ignorantly and against their will.

"This measure is not aimed merely at the venereal diseases. Similar measures in force in other States specify insanity, chronic alcoholism, tuberculosis, and the venereal diseases. All breed degeneracy and disease in the progeny. Those of us who are already fathers of girls know of no other way of guarding them against danger. We trust we shall find you willing to help our cause, also that of our and your women and children."

ROBERT N. WILLSON, M.D.

Cyclopædia of Current Literature

ARTERIOSCLEROSIS, DIAGNOSTIC FEATURES OF.

The importance of arteriosclerosis must be judged by the symptoms which accompany it. In itself, a moderate degree of arteriosclerosis is of no importance to the individual; it is important only when considered in relation to its causes, and the possibility that its continuance may bring about

serious functional and structural degeneration of blood-vessels which will endanger the function of certain structures.

To trace the steps in the process of development of arteriosclerosis and its symptoms, it is necessary to begin with the physiology of the circulation. The organs of the circulation are composed of the heart, arteries, and veins, which consist of soft, expansible vessels, capable, when relaxed, of holding three times as much blood as is ordinarily found in the body. For the proper circulation of this blood, the organs of the circulation are maintained in a uniform state of tension, which is altered in one place or another to vary the blood-supply to meet the demands of the body. This general tonicity of the vessels is maintained by a central nervous influence that is constantly active. When, for any reason, this central influence is in excess, hypertonicity of the blood-vessels is the result. This immediately complicates the circulation by demanding a higher blood-pressure, and tends to a hypertrophy of the heart. Under such circumstances, arteriosclerosis develops either as a conservative measure analogous to the hypertrophy of the heart, or perhaps also in a measure as a trophic change of central origin.

The symptoms of arteriosclerosis are, therefore, the symptoms of hypertonia vasorum, with its irregularity of blood-vessel control, excepting in the case of very gross lesions, where there may be purely mechanical local results due to the blocking or rupture of a blood-vessel.

This conception of arteriosclerosis, the writer says, seems to him to explain the local and general symptoms better than any theory that regards only the pathological anatomy. The influence of the nervous system in originating and maintaining a vicious tension in the circulation is second only in importance to the results of degenerative kidney-disease, and of late years it has seemed to him that the cases of nervous origin are becoming even more frequent than those primarily of nephritic origin. Much is said about the strain of modern life, and it seems that here is a point where the finger could be put upon a definite result of a too strenuous existence. Constant strain and worry bring about changes in the circulatory system which apparently lead eventually to structural changes, to hypertrophy of the heart, and the subsequent secondary degeneration. The condition is found in women as well as in men, although men are more subject to the causes. L. F. Bishop (Medical Record, March 16, 1907).

CARCINOMA AND SARCOMA, X-RAY IN THE TREATMENT OF.

All the theories advanced to account for the influences of the rays on malignant growths seem to point to a leucocytosis being ultimately produced in or around the growths. According to one authority, they have a special selective action on new growths, the cell-nuclei swell, do not stain well, the outlines of the cells become indistinct and fuse, the protoplasm becomes granular, is invaded by leucocytes and absorbed, leaving a network of dense connective tissue containing vessels with thickened walls from endoarteritis and periarteritis caused by the rays. Some sort of reaction seems to the author absolutely necessary. This reaction may take the visible form of redness in the mass if protruding through the skin or around the edges of an ulcer; swelling or hardness of the tumor; increased heat;

perhaps in some cases increased pain or other vague, undefined feelings of the patients. If a discharge be present, it soon takes on a more healthy nature, both as regards appearance and odor. Sometimes there is pent-up pus, with elevation of temperature and night-sweats.

The rays should be used both before and after surgical intervention. Failure may result from inexperience of the operator, vagaries of the apparatus, too weak or too energetic treatment, the hopelessness of the case, dissemination of the lesion throughout the internal organs, or the patient's low vitality. Except in cases in which the growth is extremely local, the author thinks it best not to screen the surrounding tissues. The pain of malignancy can be greatly alleviated by this mode of treatment. The pain that is sometimes noticed in cases where it is obviously due to the dragging or contraction of the scar does not seem to yield so readily as "growth" pain. Pain produced by pent-up discharge or the disintegration and liquefaction of the malignant cells can only be relieved by the patient's absorptive powers or by an exit naturally or artificially produced. In uterine cases it is important carefully to distinguish between the period pain and the pain of the growth while under treatment. C. Williams (Lancet, January 26, 1907).

CEREBRAL HÆMORRHAGE, DIAGNOSIS OF.

The points which differentiate hæmorrhage in the brain from softening, have been studied by the writer, on a basis of arteriosclerosis. Since 1900 about 422 patients with apoplexy have been treated at the public hospital and 256 succumbed. Of this number 201 came to autopsy, and in 5 both cerebral hæmorrhage and softening were found. This leaves 197 cases for research on the differentiating points, as softening of the brain was observed in about a third, and cerebral hæmorrhage in the others.

After critically sifting and reviewing the various symptoms observed, and comparing them with the post-mortem findings, he summarizes the signs that indicate cerebral hæmorrhage as follows: severe onset, especially with profound coma, and inability to move the limbs in the total and extensive cerebral paralysis which frequently is rapidly fatal; blood-stained cerebrospinal fluid on lumbar puncture; age under 55 (especially under 50); low temperature at first, if no other cause for the subnormal temperature can be discovered; possibly a mild epileptic seizure as the initial symptom; retinal hæmorrhage and rigidity of the paralyzed limbs, especially of the arms. Further useful signs, although of comparatively less importance, are hypertrophy of the heart without a valvular defect; albuminuria or nephritis, and normal or hyperæmic papillæ, and the vessels in the retina well filled or gorged. There are no pathognomonic signs for acute softening, but the absence of initial loss of consciousness, with the serious paralysis and with the rarer partial, dissociated paralysis suggest softening rather than cerebral hæmorrhage.

Further useful signs are the incompleteness of the paralysis, pale papillæ, and undistended retinal vessels. Sometimes the paralysis comes on gradually and there may be restlessness and vagueness. A valvular defect also points to softening, and likewise the determination of a prodrome or previous

attack, or senile epilepsy. Low blood-pressure, if no other cause for it can be assigned, also points to softening, also clear cerebrospinal fluid. In the cases reported the hæmorrhage was differentiated during life in 89 out of 108, and softening in 40 out of 63, the diagnosis being correct, therefore, in an average of 3 in every 4 cases. During the later series the data collected and recorded in this article enabled still more frequent accurate differentiation. A. Friedenreich (Hospitalstidende, Vol. xlix, No. 47; Journal of the American Medical Association, March 9, 1907).

DILATATION OF THE STOMACH, ACUTE.

The writer states that acute dilatation of the stomach is a disease of considerable clinical importance and is deserving of wider recognition. It develops under a great variety of conditions, but is especially frequent after operations with general anæsthesia. In a majority of the cases there has been an associated dilatation of the duodenum. The mechanism of acute gastric dilatation is not yet clearly understood, but in a large proportion of cases (perhaps one-half) the dilatation is associated with, and seems to result from, some form of obstruction in the duodenum.

Much the commonest cause of such duodenal obstruction is the constriction of the lower end of the duodenum between the root of the mesentery, which crosses in front of it, and the vertebral column. Such constriction can occur only when the mesenteric root, with the superior mesenteric artery which runs in it, is stretched tightly across the duodenum; and this is possible, apparently, only when traction is exerted by the small intestine hanging over the brim of the pelvis. The development of mesenteric constriction is favored, therefore, by whatever facilitates the entrance of the small intestine into the true pelvis (dorsal decubitus, a mesentery of suitable length, an empty and collapsed state of the gut, etc.), and whatever renders the duodenum more liable to compression (increased lordosis of the lumber vertebræ, low position of the duodenum, etc.). Great dilatation of the stomach would doubtless increase the liability to mesenteric obstruction, by crowding the intestines into the pelvis, and would tend, by preventing the escape of the gut from the pelvis, to render such obstruction, when once formed, more complete and permanent.

Whether the dilatation of the stomach or the mesenteric obstruction of the duodenum constitutes, usually, the first step in the vicious circle by which both conditions are made worse is still uncertain, but there is little doubt that in some cases, at least, the duodenal obstruction is primary. The symptoms and physical signs of acute gastric dilatation are usually so distinct that the diagnosis should not be difficult if the possibility of such occurrence be but remembered. In spite of the high mortality (72 per cent.) among the reported cases, there is much evidence to show that the disease can usually be controlled and cured if the diagnosis be made and suitable treatment begun before complete collapse of the patient has occurred. L. A. Conner (American Journal Medical Science, March, 1907).

ECLAMPSIA AND TETANY, PARATHYROID INSUFFICIENCY IN.

From experiments on animals, the author has confirmed the assumption that the parathyroid glands have an antitoxic function, the lack of which en-

tails tetany. Partial removal of the parathyroids in the nongravid rabbit does not cause any appreciable disturbances, but total removal may have a fatal effect. The entire removal of both parathyroid and thyroid glands may induce fatal tetany. Five grams of sterilized, normal human placenta-tissue introduced into the abdomen of a rabbit or other animal after partial removal of the parathyroids caused invariably severe disturbances, evidently inducing extremely toxic metabolic products. The young all died later, although apparently healthy. The writer describes the anatomy of the human parathyroid glands, and states that he found four in twelve cadavers and only two in two others. They are less transparent than lymph-glands, and are further distinguished by the reddish-yellowish tint. They are round or oval, from 2.5 to 15 millimeters in diameter, and a little tougher in consistency than the thyroid gland. V. Frommer (Monatsschrift fur Geb. und Gynäkologie, Bd. xxiv, Nu. 6; Journal of the American Medical Association, February 16, 1907).

EXUDATIVE PLEURITIS, TREATMENT OF.

The majority of cases of sero-fibrinous pleurisy depend upon tuberculosis. The earliest possible removal of considerable effusions is one of the most effective means for bringing on absorption, even when they are apprehended during progression. In extensive effusions occupying the entire pleural space, even such as reach at last to the upper border of the third rib anteriorly and give a dull sound over the whole lateral wall, one can puncture between the mammillary and anterior axillary lines in easy dorsal position of the patient. In right-sided exudations the fourth intercostal space is chosen; in left-sided ones, the fifth. To further promote absorption, solution of potas. acetate (25 : 200), theobrom. natr. sal. in daily dose of 4 grams, or, if weak heart action indicates it, small amounts of combined digitalis and strophanthus may be prescribed. Cutaneous irritation, by brushing over the affected side with tincture of iodine, may also be useful, or an iodine soap-ointment (pure iodine 0.1, potassium iodide 2.0, potassium soap, lanolin, of each 10.0), the latter particularly in case of tuberculous processes. A. Fraenkel (Deutsche medizinische Wochenschrift, Bd. xxxiii, Nu. 1, 1907).

FAINTS AND FAINTING.

The writer states that our knowledge of faints and fainting is just enough to obscure our ignorance. The most obtrusive feature of complete cardiac syncope is the loss of consciousness which results, evidently due to the failure of the action of the heart which precedes and attends it. But as consciousness is not the result of the circulation of the blood, so unconsciousness is not the direct consequence of stoppage of circulation. Its immediate cause must be a state of the nerve-elements of the brain, due to the change in the circulation. Mere failure of the supply of nutrition furnished the brain by the heart is not an adequate explanation. The renewal of nutrition of the nerve-elements, the supply on which their metabolic processes depend, is from the plasma about them, derived from the blood indeed, but for the time extravascular. At any given moment the amount of this must be adequate to maintain the metabolic changes and the function that depends on these, for a much longer time than that during

which consciousness is maintained in the syncope. Sudden death in aortic regurgitation is clearly syncopal, but it is so immediately synchronous with cardiac failure as to negative any view that it is due to failure of nutrition. Sudden diminution in blood-pressure within the cavity of the skull must, however, exert considerable influence. It will be effective in proportion to its suddenness, as are all variations of intracranial pressure. How the alterations in the nerve-elements are produced, and the nature of those alterations, is not known. It may be conceived of as a widespread retraction of cortical dendrites, interrupting their connection with all lower centers. It is doubtful whether true cardiac syncope ever causes absolutely sudden loss of consciousness, except when this is due to a fatal arrest of the action of the heart. It seldom causes a hurtful fall, the deliberate onset enabling the patient to lie down, when gravitation ceases to hinder the flow of blood to the brain and the blood-pressure is restored. When consciousness returns there is correct perception of surroundings from the first, never the mental confusion and erroneous action common after minor epilepsy. Syncope is often due to a cause which can act only through the nervous system, such as sudden intense pain, the sight of blood, certain odors, etc. Here syncope is probably the result of a profound influence on the sensory regions of the cortex, focused down on the cardiac center in the medulla. Sudden change of posture is an occasional excitant of loss of consciousness, and if the change is to the erect posture it may be regarded as syncopal. Stooping or lowering the head has the opposite effect on the intracranial circulation, tending to increase the amount of blood in the vessels. Severe paroxysms of coughing may have the same effect. Sir W. R. Gowers (Lancet, March 2, 1907).

GASTRIC AND INTESTINAL HÆMORRHAGES, TREATMENT OF, WITH FLUID GELATINE.

Excellent results are reported in the treatment of gastric and intestinal hæmorrhage by the author, by the internal administration of a preparation of fluid gelatine. The histories of nine cases are briefly given, to show the prompt effect of the remedy in such cases as typhoid fever, gastric carcinoma, ulcer of the stomach, and melena. In none of these cases was any other medication resorted to except the gelatine treatment, yet prompt cessation of the bleeding followed in all except one case, which was an unusually severe typhoid infection. In this instance the autopsy revealed the presence of extremely numerous and deep ulcers, so that it would have been rather too much to expect any remedy to effect a cure. The formula for gelatine mixture is as follows: 20 grams of gelatine is boiled during six hours with enough water to make 130 cubic centimeters. It then remains fluid, and 2 grams of citric acid is added. It may be flavored with a little syrup of orange, and is given in doses of one or two tablespoonfuls every two hours. Mann (Münchener medizinische Wochenschrift, January 8, 1907; Medical Record, February 9, 1907).

GASTRIC CANCER, EARLY DIAGNOSIS OF.

The great diagnostic importance of a gradual loss of weight, notwithstanding a nourishing diet with easily digestible food given in small amounts at frequent

intervals, is insisted on by the writer. If the patient continues to lose weight, the assumption of a malignant process is justified. If attention is directed to the stomach, symptoms suggesting atrophic chronic gastritis point to carcinoma in the fundus, while symptoms suggesting stenosis of the pylorus indicate cancer in the pyloric region, particularly when the amount of hydrochloric acid slowly declines from week to week. In the writer's experience, the history never has had the slightest value in the diagnosis of gastric cancer. An inoperable lesion may lurk behind the slightest subjective disturbances. Only by the most attentive observation of the course of the objective signs of the disease may we hope to diagnose it in its early stages, that is, before a palpable tumor is discovered. The author reports two cases in which operation was undertaken on an early diagnosis based principally on the constantly progressive loss of weight. In the first case a man of 52 lost 6¼ pounds in the course of four and one-half weeks; in the second, a woman of 45 lost 10 pounds in about four months. Both patients were constantly under observation on a nourishing, comparatively well-relished diet. The operation in the first case revealed a flat tumor, smaller than a silver dollar, on the posterior wall. In the second case, the tumor was scarcely as large as a walnut, and had developed on the basis of an old, flat ulcer in the pyloric region. The writer remarks that it certainly must be one of the smallest gastric carcinomata ever diagnosed in the living subject. The patient is in good health to date. A. Albu (Deutsche medizinische Wochenschrift, Bd. xxxii, Nu. 52; Journal of the American Medical Association, February 16, 1907).

GLAUCOMA, TREATMENT OF, BY MYOTICS.

The subject of the treatment of simple chronic glaucoma is divided by the writer under three heads: (1) beginning cases; (2) advanced cases; and (3) pronounced glaucoma in one eye, the other being unaffected, or with only a glaucomatous tendency. Beginning cases are those which have possessed the tendency to glaucoma for a number of months or years, and are now manifesting some positive signs of the disease, the tension being, perhaps, more or less elevated, the cupping demonstrable, or some restriction or scotoma having appeared in the visual field. The author has had 12 such cases under his care for a number of years. His treatment is eserine in one-grain doses, increasing the strength gradually, as the iris and ciliary muscles become tolerant to its action. The proper correcting lenses are also selected, and careful instructions are given regarding the restricted use of the eyes at near work. Alteratives and tonics are prescribed, and the regimen of the patient's life carefully outlined. It is true that the disease has progressed despite the constant use of myotics and diligent care directed to every source which could influence the ocular condition, but the progress has been so slow that in all fairness it may be stated that the disease has been at least controlled.

Under advanced cases is considered the not uncommon type where vision in one or both eyes has been seriously compromised by the marked restriction of the visual field, either peripherally by cutting, or centrally by scotoma. The author cites a case in which iridectomy being apparently out of the question, on account of the marked limi-

tation of the field, treatment with myotics was inaugurated, though it was felt that but two or three months would suffice to obiterate the small portion of the visual field which remained. Eserine was administered with good results. At the end of six months pilocarpine nitrate in twice the strength was substituted for the eserine, and during the past thirteen years there has never been a day that either eserine or pilocarpine has not been instilled three or four times daily. Slight conjunctival irritation has arisen at times during this interval, but has always readily yielded to treatment.

For the third series the author again gives the history of a case in which a solution of eserine, gr. 0.125 to the ounce, was prescribed, this strength being rapidly increased until the pupil was brought to almost pin-point contraction. Despite this treatment, however, the field still further deteriorated and vision sank to $^{2}/_{60}$. An iridectomy was accordingly performed on the left eye, the right being kept under the full influence of eserine, both before and after operation. The progress of the case since the iridectomy was performed has been favorable, vision in the operated eye remaining about the same ($^{2}/_{60}$), while that in the right eye was still normal. At this time, two and one half years after the operation, the right eye still remains free from any pronounced signs of glaucoma, no pathological excavation having appeared and tension being apparently normal. The anterior chamber, however, is somewhat shallow. Eserine has been persisted in continuously and the strength of the drug gradually increased. William Campbell Posey (Journal of the American Medical Association, February 23, 1907).

HYDRONEPHROSIS.

A number of cases are reported for the purpose of calling attention to the confusion which still exists as to the relations of false and true hydronephrosis. In true hydronephrosis the sac which contains the fluid is the distended pelvis of the kidney, while in false hydronephrosis the fluid is contained in a sac outside the kidney. One case is reported in which both conditions coëxisted in connection with one kidney. This was properly a case of congenital hydronephrosis, although the dilatation of the kidney was not noticed until some years after birth. A congenital obstruction of the ureter, by looping over a vessel, was responsible for the condition. In another case cited the obstruction seemed to be a valvular one at the junction of the ureter with the renal pelvis. In this case a nephrotomy was done as a preliminary to a nephrectomy, with excellent results. A. T. Cabot (Boston Medical and Surgical Journal, February 28, 1907).

HYSTERIA IN CHILDREN; TREATMENT.

Just as hysterical symptoms are ushered in with slight provocation, so they may be made to disappear with slight but appropriate treatment, according to the writer. As soon as the nature of the ailment stands revealed to the physician, the parents must be made to understand the crux of the situation and be entirely governed by it. They must be told that a dispassionate interest, or better, no interest at all, is the most wholesome thing for the child. Moral suasion is desirable, especially in cases with purely psychic manifestations, and, together with a firm yet gentle order of discipline, initiated early, will result in great and lasting good.

When one is denied the intelligent and obedient coöperation of parents, and this is only too often the case, isolation becomes an imperative measure. Isolation, to be complete and effective, means no visitors, no letters, no messages; in short, no reminders of the past. With no intent to deprecate the talent and skill of the trusted family physician, the writer thinks that he is not the best, as a rule, the last adviser in hysterical cases. This disease is not a grateful one for the family physician to treat. Strange surroundings, strange people, and the strangest physician will exert the greatest good and effect the quickest cure. The principle involved in the method of surprise (Ueberrumpelungs Methods of Brans) is at once simple and logical. To emancipate the child from a deep-rooted obsession, and do it quickly and completely (in one trial, if possible), is the purpose of the method. If such children be given a chance to reflect and deliberate, it means almost certain defeat for the cure.

In conjunction with isolation and these clever mental devices, all methods of avail in adult functional diseases are of use here, such as diet, massage, electricity, the lukewarm bath and cold spinal douche, or the cold drip sheet. Hydrotherapy and electrotherapy are in the main extremely unpleasant and in part painful, hence successful. Hypnotism has met with growing disfavor, and is by many regarded as dangerous to children, if for no other reason than its being a form of induced hysteria. After a cure in isolation has been effected, children should not be returned to their surroundings too soon. They should be given plenty of time in which to forget all the circumstances attending their former disabilities. D'Orsay Hecht (Journal American Medical Association, February 23, 1907).

ICHTHYOSIS.

Variations in the oiliness and dryness of the human skin are very considerable, though not often very noticeable. The lubricity of the skin is greatest in adolescence and early adult life, diminishing with age. Extreme dryness of the skin is less frequent; it is met with in the old as a part of the general atrophy of the skin with lessened glandular activity. It is also met with in very thin-skinned persons, in whom the physiological exfoliation is not sufficiently compensated for by growth from beneath; the use of much or poor soap aggravates the condition. In certain persons this dryness of the skin becomes so marked as to be considered a disease—"ichthyosis." It commences in intrauterine life, but is usually in abeyance until some months after birth, after which it manifests itself with ever-increasing aggressiveness. Whatever may be its hidden cause, it must be regarded as an exaggerated development of epidermis, or a hyperkeratosis with atrophy of the deep layers of the rete mucosum. Any inflammatory appearances are probably accidental rather than inherent. Its essence consists in undue retention of the corneous layer, exfoliation being in abeyance.

In the treatment efforts must be directed to promote and secure regular systematic exfoliation of the unduly adherent and effete horny cells. Sulphur thins the epidermis, but adds to the dryness and is apt to set up inflammatory changes. Resorcin, however, not only favors continual desquamation, but tends to leave the underlying surface polished and pliant. Combined with starch and glycerine (the resor-

cinized glycerine of starch), it proves beneficial in all cases, if begun early enough and steadily persevered in. A superfatted soap, to which resorcin and salicylic acid have been added, must also be used. Internal remedies are of little use in ichthyosis, the only one of service being codliver-oil in small doses at night. W. A. Jamieson (British Medical Journal, February 16, 1907).

INFLUENZA, CLINICAL ASPECTS OF.

The catarrhal form of influenza as affecting the lungs is attended with physical signs which are quite characteristic. The writer cites the explosive inspiratory crepitus, especially in the posterior lobes, with an absence of percussion dullness, also a straining paroxysmal cough, with very little expectoration at first, but with profuse, glutinous, and purulent discharge after a few days. The cough and fever are suggestive of œdema around miliary tubercles, though the latter may be entirely wanting. With pneumococcal infection superadded, the pneumonia aspect of the case becomes marked, and especially the tendency to paralytic filling of the lungs and cardiac failure. Acute anginal seizures in such cases may be without actual cardiac lesions. The anginal phenomena with increased arterial tension were observed in connection with urine of high specific gravity and with such an excess of urea that the addition of nitric acid would cause the deposition of scaly nitrate crystals. Nerve phenomena which the author has observed, in addition to intense headache, depression, and insomnia, are paraplegia, neuritis, and diaphragmatic neuralgia. Spasmodic asthma has been a sequel in many cases, which cases are successfully treated by balneotherapy. R. D. Powell (Practitioner, January, 1907).

INFLUENZA, TREATMENT OF.

Arsenic, in alcoholic solution, 1 to 800, given in 5-minim doses, morning and evening, is said by the writer to be a most efficient prophylactic against influenza. From 3 to 5 minims of the tincture of the fresh root of gelsemium, in 6 ounces of water, given in dram doses, every one to three hours, is considered by the author practically a specific for almost every step, stage, and variety of influenza when free from serious early complications. E. E. Miller (Medical Record, February 23, 1907).

JAUNDICE.

All forms of jaundice are either intralobular, interlobular, or extrahepatic, and are due to obstruction of the biliary passages. The severity of jaundice in the intra- and interlobular forms varies, all depending upon the amount of biliary radicles occluded. The differential diagnosis between these two forms is generally reached after considering the history of the case and the result obtained in the treatment of the same. In the extrahepatic form of jaundice, where the obstruction is due to biliary calculi, it is always advisable to submit the patient to a thorough medical treatment before allowing him to submit to operative interference. If the obstruction does not yield promptly to medical treatment, surgical interference should at once be instituted. Antonio Pisani (Albany Medical Annals, March, 1907).

LARYNGEAL CANCER.

Attention is called by the writer to the great importance of early recognition of malignant growths of the larynx; the earlier the operation, the greater the chance of cure. An extremely valuable

laryngoscopic sign of beginning cancer is the following: if the vocal chord from which a suspected laryngeal growth springs shows at an early period of the disease a defect of mobility other than due to mechanical impaction of the growth in the glottis on phonation, this sign is almost pathognomonic for the malignant character of the tumor. If, however, this sign should yet be absent when the case comes under observation, such negative evidence does by no means exclude malignancy. The writer favors the preliminary microscopical examination of an intralaryngeally removed piece of the new growth; it may not only fully corroborate the clinical diagnosis, but also strengthen the surgeon in proposing immediate radical operation. It is highly improbable that the few days which must elapse between the intralaryngeal removal and the report of the microscopist are likely to bring about any important deterioration of the local conditions, whilst the fear of local autoinfection of previously healthy parts in the larynx or of metastasis elsewhere is equally little justified.

So far none of the modes of treatment, other than surgical, such as Doyen's serum, trypsin injections, etc., have proved of any value. In cases of intrinsic laryngeal cancer, the operation of choice, in the author's opinion, is thyrotomy. Of 25 patients operated upon by him, 20, or 80 per cent., have remained lastingly cured. The vocal results were surprisingly good. One great advantage of the operation is that if recurrence takes place, more radical operations can still be done. Intralaryngeal operations are insufficient, and, as a rule, damaging to the patient. Hemilaryngectomy or partial extirpation will probably ultimately be limited to those cases of intrinsic cancer which come under observation only at a period when the disease has already invaded the cartilaginous framework, and to a few exceptionally favorable cases of extrinsic cancer. Subhyoid pharyngotomy can be employed only in a very limited number of cases, namely, in those in which the disease is situated near the upper aperture of the larynx. As regards total extirpation of the larynx, the author's experience has been anything but encouraging. It is beyond the shadow of a doubt one of the most mutilating operations in surgery. It does away with speech in its ordinary sense, and in not a few cases to this loss of speech is added permanent difficulty in swallowing, which compels the patient to take his meals alone, or even to be fed artificially. Sir F. Semon (British Medical Journal, February 2, 1907).

MEASLES, KOPLIK'S SPOTS AND.

Koplik's symptom is a constant, definite, early diagnostic sign of measles, of greater diagnostic value, when present, than even the rash. The constancy of the symptom is indicated by the fact that in 221 cases observed from the period of incubation well into convalescence, it was definitely absent only twice.

Koplik's spots sometimes disappear before there is any sign of a skin eruption, and frequently before the rash has fully bloomed. Cases seen in the earliest stages and presenting but few of these spots as yet are known to have infected exposed children, and for this reason the early detection of the spots can hardly be expected to prove a prophylactic measure of any great value. Koplik's symptom is usually, if not always, preceded by a febrile movement, and the thermometer would seem to be the best aid in early diagnosis when dealing with

an epidemic in an institution. C. J. Dillon (Medical Record, February 16, 1907).

PALUDISM, ATYPICAL MANIFESTATIONS OF.

Ten atypical cases are detailed by the author, and he concludes that chill, fever, and sweating are not always the mode of onset of malarial infection. The seat of pathological change or congenital defect is often the point of attack of plasmodial invasion. Periodicity is the one pathognomonic symptom of all forms of paludal infection, and women are oftener the victims of malarial infection than men. Quinine is the standard remedy for malaria. He also notes that tissues which have undergone pathological changes and those which are congenitally defective are more susceptible to the toxin, which is elaborated in the process of segmentation of the hæmatoza. What the factors are which determine the variation in the mode of manifestation of this toxæmia, so that in one patient it takes the form of a febrile reaction, in another a painful paroxysm, or a seizure of some sort in an organ previously crippled by disease or congenitally defective, are at present not fully determined, but the fact is fully attested by ample clinical observation. J. J. France (New York Medical Journal, February 9, 1907).

PARATHYROIDS IN MAN.

The observations on the parathyroid and accessory thyroid glands in man made by the writer are based on an examination of nearly sixty human cadavers. The number of parathyroids in man has been stated to be two on each side, but he found the number to be very variable. On one side of the neck one parathyroid was present in less than one-half the cases, two in about one-quarter, in a few cases three, in two cases four, in two cases five, and in one case six. In a few cases no parathyroid at all was found. Their position is inconstant, and there is rarely symmetry between the two sides. The most frequent site is on the lateral surface of the thyroid gland, at or near its posterior border beneath the inferior thyroid artery. One-third of the glands found lay in this locality. The parathyroid cannot be identified with certainty except by microscopical examination. In size it varies from little more than a pin-point up to 2.5 centimeters. They occur in greatest number in the first year of life, and decrease progressively from then on. Accessory thyroids were frequently found. The writer is not disposed to admit for the parathyroids that physiological value attached to them by many observers. D. Forsyth (British Medical Journal, February 16, 1907).

PLEURISY WITH EFFUSION, TREATMENT OF.

The author describes his technics of operation for pleurisy with effusion as follows: The dangers of removing fluid from the chest are always insisted on; they certainly can be reduced to a minimum when the operation is performed with the necessary precautions. He has always used the aspirator, and in all his experience has never had a bad result. When the aspirator is properly used it is as safe as withdrawing the fluid with a trocar and syphon arrangement and much more convenient, as the flow of the fluid can be controlled and no air can enter the chest.

In addition to complete asepsis, the following precautions are essential to safety: the pressure within the aspirator should be reduced to its minimum

in the beginning; it is rarely necessary to increase it at any time. As the intrapleural pressure with effusion never exceeds 40 millimeters of mercury (about two inches), anything below this will succeed in aspirating the fluid. So that at first the aspirator should contain air. If the negative pressure in the aspirator be too great, the lung will be suddenly expanded, which may be followed by all those unpleasant consequences which are so thoroughly understood by all. Very little negative pressure is necessary in the aspirator, as it is more than likely that most fluids would flow from the pleural cavity without much suction, as when an opening is made the pressure of the fluid is the intrapleural pressure.

The next precaution to be taken, and just as important as the former, consists in not attempting to withdraw all the fluid at one sitting. Aside from the fact that this is impossible, it would be unnecessary if it were possible. Furthermore, the drawing off of these large quantities of fluid at one time leads to dangerous conditions: albuminous expectoration, cough, syncope, acute œdema of the lungs, death. No rule can be laid down as to how much fluid should be removed at one time. It may be 300 cubic centimeters; it may be more, but under all circumstances not any more should be withdrawn than is necessary to remove all the symptoms. In most cases it will not be difficult to determine when the second aspiration should be performed; when dangerous symptoms reappear, or when the absorption does not take place in a few days, it is time to aspirate again.

Another precaution to be taken is that the patient be in a position which approaches the recumbent as nearly as possible. Lastly, the patient should be carefully watched while the fluid is being withdrawn; if he coughs violently and spasmodically, if he has a feeling of constriction or feels faint or has great pain, the operation must be interrupted; after a little while, the symptoms having disappeared, another attempt may be made; if the symptoms again appear, the needle must be withdrawn and the patient put to bed. F. Forchheimer (Journal of the American Medical Association, January 5, 1907).

POSTOPERATIVE PNEUMONIA, EXPERIMENTAL STUDY OF.

Twenty-two rabbits were anæsthetized by the writer with chloroform, and it was found that it invariably induced severe injury of the alveolar epithelium. The epithelium softens and is thrown off, and there is hæmorrhage into the alveoles. This plugs up the bronchioles and tiny atelectatic foci result, scattered throughout the lungs. These foci are sterile, but they afford places of minor resistance to arriving infection. A great reduction in the immunity of individuals under the influence of general anæsthesia was noted by the author, and daily clinical experience shows manifold possibilities for infection after general anæsthesia. The injurious action of the chloroform on the lungs must be regarded as a serious complication, probably responsible for the majority of the cases of postoperative pulmonary disturbances, although the results of experiments on animals are not conclusive for man. The rabbits invariably developed lobular pneumonia within forty-eight hours, and the severity of the lung complication was proportional to the length of the anæsthesia. The experiments, as a whole, certainly suggest that chloroform is a more important factor in the production

of postoperative pneumonia than has been realized hitherto. A. v. Lichtenberg (Münchener medizinische Wochenschrift, Bd. liii, Nu. 47, 1906; Journal of the American Medical Association, January 12, 1907).

POTASSIUM IODIDE IN THE DIAGNOSIS AND TREATMENT OF SYPHILIS AND CANCER.

The author considers two practical problems: first, the use of potassium iodide for the rapid diagnosis of cancer from tertiary syphilis; and, second, the use of the same drug in the treatment of cancer of internal organs. The first question he solves by giving from one to three enemas, containing a drachm of potassium iodide, half a drachm of sodium carbonate, and about three ounces of water in each. These are preceded by a cleansing enema used an hour previously. If the temperature of the patient rises after the injection, he has cancer. In syphilis the temperature remains normal or becomes subnormal. Iodine-poisoning is very rarely seen with this method. The second problem concerns the method and dose to be used in treating cancer with potassium iodide. The author notes that within the past five years he has been able to materially assist fifteen patients with cancer of the œsophagus by the use of potassium iodide. These patients were aided in swallowing by this simple treatment, after they had been told that they must be operated upon. The larger the tumors had been, the softer had been their structure, the more marked was the reaction to potassium iodide. The mode of administration was the same as in the diagnostic method just mentioned. It is possible that cancer can be treated with potassium iodide in the method indicated, and there is an analogy between the effect of this drug and of Koch's tuberculin in tuberculosis. Mikhailoff (Roussky Vratch, December 16, 1906; New York Medical Journal, February 9, 1907).

PRE-ICTERIC ITCHING.

Itching sometimes precedes the onset of jaundice by a variable length of time; it may cease the moment the jaundice is established, or it may continue indefinitely. Itching, whether pre-icteric or icteric, is not due to a deposit of bile pigment in the skin. The liver as a possible factor should not be overlooked when itching exists for which no cause can be found. Pre-icteric itching is suggestive, though not pathognomonic, of the existence of malignant disease involving the liver or the biliary passages. David Riesman (American Medicine, February, 1907).

PULMONARY ŒDEMA, ACUTE.

There is an acute pulmonary œdema that comes on without any apparent exciting cause and often kills in a short time. Recovery from an attack is frequent; but there is a striking tendency to recurrence, subsequent attacks being similar to the first. They set in suddenly, usually at night, and place the patient's life in jeopardy. The clinical causes are various: arteriosclerosis and cardiac and renal disease are most important. The pathogenesis is obscure; vasomotor disturbances and a disproportionate activity of the two ventricles (the right predominating) are the chief factors. The chief symptoms are agonizing dyspnœa, cyanosis, cough, expectoration of frothy albuminous fluid, and profound prostration. Over the lungs, often more over the upper than

the lower portions, the characteristic moist râles of œdema are heard.

The most valuable remedies are bleeding, dry cupping, and cardiac stimulants. David Riesman (American Journal Medical Sciences, January, 1907).

RENAL TUBERCULOSIS.

The writer remarks that the old notion that renal tuberculosis is secondary to that of the bladder is now exploded, and its hæmatogenous origin is very generally recognized. This view, supported by clinical experience, is also supported by the experimental findings of Baumgarten, that tuberculous infection in the genito-urinary system follows the flow of the secretions, from the testicles to the prostate and from the kidneys to the bladder. Renal tuberculosis is generally at first unilateral, and in spite of the fact that it may occasionally become latent for longer or shorter periods, its usual course is progressive, and experience has demonstrated that early nephrectomy, before involvement of the bladder occurs, is the best treatment for unilateral renal tuberculosis, provided the general condition of the patient permits. The existence of tuberculosis elsewhere, if not too far advanced, is not a contraindication; even bad cases of vesical tuberculosis may improve or recover after operation, as has frequently occurred in the writer's experience. It should be remembered, too, that the tuberculous disease of the bladder is often only apparent, as a reflex from the kidney or the result of irritating discharges. The one essential to be kept in view is that the other kidney must be sound, both as to function and tuberculosis, and an occasional exploratory lumbar incision may be required, though, as a rule, this is ascertainable by other well-known methods. The weight of authority is against partial nephrectomy, and nephrotomy is never indicated except to relieve suffering in case nephrectomy is impossible. It cannot cure, and almost always leaves a troublesome urinary sinus. The removal of the ureter is not ordinarily indicated. If sinuses result, they usually heal after nephrectomy. L. Freeman (Journal of the American Medical Association, December 22, 1906).

SHOCK, BLOOD-VESSELS IN.

The author reiterates his views as to the nature of shock and the conditions of the blood-vessels during shock. He holds that the vessels, and especially the peripheral vessels, are tensely contracted, and that the blood is forced, rather than drawn into the central parts of the body. He is of the opinion also that adrenalin administered for shock can be beneficial only at considerable risk, and that saline injections are useful and free from danger only during recovery from shock. He prefers injections into the cellular tissue to intravenous injections, because if the fluid does not find its way into the vessels from the cellular tissue an attempt to force it into a vein is likely to prove harmful as well as futile. He regards the usefulness of injections with a view to increasing the bulk of the blood as very limited in cases of uncomplicated shock. The most important treatment is preventive. Everything possible should be done to maintain a flow of blood to the surface and to the head, and to keep the patient alive by warmth, by the administration of strychnine and of vasodilators, and by mechanical means. The surgeon must reduce the traumatism by getting over the operation quickly. J. D. Malcolm (Lancet, February 23, 1907).

TONSIL IN RELATION TO INFECTION AND INFECTIOUS DISEASES.

The tonsil is anatomically admirably arranged to resist infection. It is continually exposed to the action of pathogenic germs, and when there is an inflammation of the tonsil, it is caused by a pathogenic germ which is endeavoring to enter, and the inflammation itself is essentially a defensive reaction. Therefore, when the resistance of the body is lowered from any cause, or the germs are virulent enough to overcome the other means of defense, which the tonsil has in common with the rest of the oral mucous membranes, or if the tonsil is wounded, a positive chemotaxis having been produced, there is a lacunar tonsillitis. When now a negative chemotaxis is produced, either on account of the virulence of the infection or from some other unknown cause, there is a general systemic infection without a tonsillitis. When a systemic infection occurs, it is either in spite of the defensive reaction or on account of negative chemotaxis. The relation of the tonsil to infection and infectious diseases is one of protection, and the disease called lacunar tonsillitis is an example of phagocytosis and is a defensive reaction. R. C. Brown (Medical Record, March 2, 1907).

TOXIC REACTION AND THE X-RAYS.

The authors warn against the incautious use of x-rays, not only because of the possible deleterious effect upon the skin, but because serious or fatal conditions may result, with indications of acute intoxication. Three cases of severe reaction after a single exposure are narrated, two of them being fatal. The study of these cases showed that metabolism had been profoundly influenced by the exposure. There was a sudden drop in the excretion, followed by an equally sudden and excessive rise. The explanation which is offered is that great tissue-destruction occurs immediately after exposure. The organism is then overwhelmed with a volume which it cannot immediately throw off. Metabolism, therefore, is checked, and the retention of the disintegrated material produces the signs of acute intoxication. Individuals who are already toxæmic are especially liable to be overwhelmed by such a process, particularly since the tissue-destruction produced by x-rays involves tissues rich in meleprotein. The danger of intensifying preëxisting kidney disease by the use of x-rays must be especially apparent. D. L. Edsall and R. Pemberton (American Journal Medical Sciences, March, 1907).

Book Reviews

THE PRACTITIONER'S MEDICAL DICTIONARY. An Illustrated Dictionary of Medicine and Allied Subjects. With 388 Illustrations. Octavo; xvi + 1043 pages. Flexible Leather, Gilt Edges, Rounded Corners, $5.00; with Thumb Index, $6.00, net. P. Blakiston's Son & Co.

As a maker of medical dictionaries no man has approached the scholarly completeness of George M. Gould, A.M., M.D. For ordinary use by the general practitioner this dictionary will be welcomed even more than the large, classical work for which the author has so long been famous. The makers claim that this is a new book in every respect, and is brought fully up to date consonant with recent medical literature; containing the anatomical nomenclature adopted at Basle, also the newer standards in pharmaceutical preparations authorized by the revision of the United States Pharmacopœia. A feature of the book is that it is adaptable

for ready reference, and yet concise and complete. It is no bigger than those volumes we call "manuals," and the manner of binding and the thinness of the paper furnish a book pleasant to handle and to see. The illustrations are numerous for so small a volume, and yet there are presented over a thousand pages. Altogether, this handy reference dictionary cannot fail to meet with widest welcome.—J. M. T.

PHYSICAL CHEMISTRY FOR PHYSICIANS AND BIOLOGISTS. By Ernest Cohen, of Utrecht. Translated from the German by Martin H. Fisher, of the University of California. Pages 343. New York, Henry Holt & Co. 1903.

It is most important for the general practitioner to secure a reasonable familiarity with physical chemistry, and this little volume has supplied in readable form that which he ought to know. It is arranged in the form of lectures, a desirable method, because the interrelationships are better exhibited. No table of contents is given, but there is a full index of subjects and of authors.—J. M. T.

CHART OF HUMAN HEAD AND TRUNK. By Rudolf Weber. 18 by 36 Inches. Drawn and Colored from Nature. Henry Holt & Co., New York and Chicago.

This excellent chart is useful for the clinician, since it is of life size, and, while anatomically accurate, is somewhat diagrammatic. Its special value is that it shows the innervation of the blood-vessels from the spinal segments to the periphery. The reviewer has always urged attention to these vasomotor relationships as being of marked utility in clinical work.

A convenient method of mounting this chart is to pin it up with thumb-tacks on the inner side of a glass door.—J. M. T.

SCHENK AND GURBER'S OUTLINES OF HUMAN PHYSIOLOGY. Translated by Dr. William D. Zoethout. Preface by Prof. Jacques Loeb, of University of Chicago. Henry Holt & Co., New York and Chicago.

This is really an outline of human physiology, whereas many books purporting to be this are merely elementary presentations of the facts of physiology. The book is of sufficient size (340 pages) to furnish a pretty complete summary of fundamental facts, systematically arranged. There is a trifle over much of chemical formulæ for the average undergraduates, but the book is designed to be of use to more advanced students as well.—J. M. T.

PROBLEMS OF BABYHOOD. By Rachel Kent Fitz, A.M., and George Wells Fitz, M.D. Twenty illustrations by Edward Bell. 118 pages. Henry Holt & Co., New York.

Dr. and Mrs. Fitz have produced an exceedingly pleasant and suggestive little book, which forms excellent reading for mothers. It is scholarly, scientific, and agreeable. The book is divided into two parts: "Part I. the Building of a Constitution," in which the chapters deal with "Fresh Air," "Clothing," "Sleep" and "Exercise." "Part II. Forming a Character," under which are chapters on "Foundations," the "Mother" and the "Child." So far as the reviewer knows, it is a unique presentation of the subject. A score or two of books of a similar intent have been reviewed, but this meets needs which the others do not.—J. M. T.

THE MEDICAL EPITOME SERIES. DISEASES OF THE NOSE AND THROAT. By J. Bruce Ferguson, M.D., Instructor in Diseases of the Nose and Throat in the Post-graduate Medical School and Hospital, New York. Series edited by Victor Cox Pederson, A.M., M.D., Lecturer in Surgery at the New York Polyclinic Medical School and Hospital; Genito-urinary Surgeon to the Out-patient Departments of the New York and Hudson Street Hospitals; Anæsthetist to the Roosevelt Hospital. Lea Brothers & Co., Philadelphia and New York.

The high standard originally set for the Medical Epitome Series has been carried out to a surprising extent in this small volume. The different diseases have been well classified, and the subject matter has been presented in a concise and practical form. While the text may appear quite superficial to the specialist in these diseases, the student and general practitioner should find it a great assistance in mastering the fundamental principles of this specialty.

Many helpful illustrations appear throughout the book, and at the end of each chapter are found numerous questions which should be of decided benefit to those quizzing in this

branch of medicine. Tracheotomy and intubation, two operations every practitioner should be familiar with, are considered in the final chapter, and the technic of each is so described as to be easily followed by the reader.

We beg leave to call the attention of the publishers to a typographical error in the first line on page 115, and one in the line next to the last on page 161.—R. B. S.

CHRISTIANITY AND SEX PROBLEMS. By Hugh Northcote, M.A. F. A. Davis Co., Philadelphia, 1906.

Mr. Northcote has given us in a concise form pretty much all that is possible on a most important subject. The book will prove of great value, not only to physicians, for whom presumably it is written, but to clergymen also, who will find in it facts and opinions most necessary to enable them to form judgments. It is also admirably adapted for popular reading. It may be said that books of this character are shunned in the main. But this should not be the case. It is preëminently necessary that mankind learn from authoritative sources much that is left untouched upon by those who presume to teach. The whole subject of sexual relationships is, unfortunately, left to prurient minds to mold as they please, and usually with much resulting harm.—J. M. T.

NATURAL LAWS OF SEXUAL LIFE. Medical Sociological Researches. By Anton Nystrom, Stockholm. Translated by Carl Sandzen, of the University of Kansas. The Burton Co., Kansas City, Mo. 1906.

The book before us covers somewhat the same ground as the one by Mr. Northcote, but rather more elaborately and definitely from the standpoint of the physician. The chapter headings are somewhat similar. Physiology and psychopathy are more in evidence, and, altogether, the book is more systematic and complete. The reviewer has not been able to detect, in a fairly careful survey of this work, anything which is objectionable, and, therefore, it would seem that it may be recommended for reading among physicians and, possibly, the laity. The chapter on the evolution of sexual morals is eminently trustworthy, and, altogether, one may commend this book, on a preëminently delicate subject, which is, however, treated in a scholarly, scientific, and judicious fashion.—J. M. T.

Books and Monographs Received

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"Annual Report of the Surgeon-general of the Public Health and Marine-hospital Service of the United States for the Fiscal Year 1906."——"Fourth Annual Report of the Committee on the Prevention of Tuberculosis of the Charity Organization Society of the City of New York for the Year 1905-1906."—"Paraffin in Surgery, a Critical and Clinical Study." By William H. Luckett and Frank I. Horn, New York City. 1907.——"Psychology Applied to Medicine." By David W. Wells.——"Text-book of Psychiatry." By E. Mendel, Berlin, Germany. Authorized translation, edited by William C. Krauss, Buffalo, N. Y.——"The treatment of Pleurisy with Effusion." By F. Forchheimer, Cincinnati, Ohio. 1907.——"Recent Additions to Our Knowledge of the Physiologic Influence of Lowered Barometric Pressure." By Henry Sewall, Denver, Colo. 1906.——"A New Plan of Procedure in Retro-uterine Displacements." By E. E. Montgomery, Philadelphia. 1905.——"Uterine Myomata Complicating Pregnancy, With Cases." By E. E. Montgomery, Philadelphia. 1906.——"Fibroid Tumors of the Uterus." By C. P. Noble, Philadelphia. 1906.——"The Glandulary Power and Significance of the Epithelium of the Convoluted Tubules of the Kidney and the Therapeutic Value of their Products Soluble in Water." By M. J. Renaut, Lyons, France. Translated by Frank Abbott and Alexis Law-Gisiko, New York City. 1903.——"The Cure of Psoriasis, with a Study of 500 Cases of the Disease, Observed in Private Practice." By L. Duncan Bulkley, New York City. 1906.

The following have been received from the United States Department of Agriculture, Washington, D. C.: "The Lime-sulphur-salt Wash and its Substitutes." By J. K. Haywood. 1907.——"Costs of Hauling Crops from Farms to Shipping Points." By Frank Andrews. 1907.——"Flax Culture." Extracted from a Report of H. L. Bolley, by W. L. Marcy. 1907.——"The Use of Alcohol and Gasoline in Farm Engines." By C. E. Lucke and S. M. Woodward. 1907.——"The Eradication of the Cattle Tick." 1907.——"Investigations in the Use of the Bomb Calorimeter." By J. August Fries. 1907.——"Experiment Station Work, xxxix." 1907.——"Planning a Cropping System." By W. J. Spillman. 1907.——"Hydrocyanic-acid Gas Against Household Insects." By L. O. Howard. 1907.——"The Locust Borer and Methods for its Control." By A. D. Hopkins. 1907.

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Original Articles

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DISEASE AND THE PREVENTION OF DISEASE IN EARLY LIFE.[1]

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Life. Disease. Death. Such is the problem which plants, animals, and human beings present to us. From a medical point of view we deal with these questions not according to the various pagan or religious ideas emanating from different parts of the world, and often obscured by mysticism, tradition and relics of past ignorance. On the contrary, these three factors of an intensely interesting world's problem are to us entities. All true happiness depends on our being sure that these entities are real and exist. What is Life? What is Disease? What is partial Death? What is Death? as we see them in the medical world.

You have been told in a previous lecture that life is harmony: that it is an harmonious action of the living tissues of the individual, while in contradistinction a lack of harmony in these tissues is disease. In like manner a complete cessation of the harmonious action of some or all of the living tissues means partial or complete death. Exactly what this means is not only a knowledge of the prolongation of life, but of life in its truest sense, namely, a condition of health which not only means physical happiness, but also through this health the greatest productive power of the brain, which again means inestimable benefit to the human race. On the other hand, the body crippled by disease means not only a physical impossibility to add strength and vigor for the general good, but means marked lessening of energy, with

[1] An address given as one of the free lectures to the public at the Harvard Medical School, March 17, 1907.

a corresponding loss of power to resist the fallacious influences of every-day life and to unfit us to aid in placing the problem of living on a firmer basis.

The struggle, then, is for life as the antithesis of death. The activity of all living things is shown in a peculiar way. The tendency is to destroy. The stronger, with their harmonious tissues, to destroy the weaker with their lack of harmonious tissues and their lessened resistance to death. Through the long progressive chain of the vegetable and animal kingdoms, we see this continual warfare, and it makes no difference whatsoever whether we are dealing with the amœba swallowing and destroying still lower organisms, or animals destroying other animals, or man destroying animals. The entire world is made up of a continual warfare for destruction. There may eventually be peace among nations, but the whole animal kingdom must kill to live, and be killed to let others live. The individual human being has a constant battle going on in the midst of his own tissues: there is a continual invasion of the individual's tissues by organisms which, if not devoured and repelled by the defending healthy organisms, inevitably produce disease by crippling the tissues, and these organisms, if overwhelming in their invasion, finally produce death. If, however, these invading organisms produce death of the tissues, then the organisms themselves in turn die, for they can only live on living tissues. We must not destroy all the vegetables and animals on which we live, or else we die. From time immemorial, ever since the first living organism was evolved, the tendency has been for the stronger to destroy the weaker. Still, in animals and in man there has been, among many others, one strong dominating instinct, the instinct which has fiercely combated the strong in their desire for the destruction of the weak. This repelling instinct, this barrier to the destruction of the newly-born, is the instinct of "parental defence." The parent defends its offspring at a time when this offspring is helpless and defenceless. In animals and in savage races this "parental defence" still remains an instinct, but the higher the civilization, the more is there added to this instinct a sense of duty. Human beings, from the time they are born, are surrounded by many dangers which will strike at the integrity of their living tissues and produce disease or death unless they are protected up to the time when they can protect themselves, both by their physical vigor and by their own experience and intelligence. It is well to understand that the younger the individual, the greater the chance of its dying.

The highest mission of the application of adult experience is represented in the protection of infants and young children, so that they shall not only escape ill health, but because inharmonious tissues mean lack of nervous energy, mean unfitness to cope with the world's problems, and tend to pro-

duce poor citizens. The careful and intelligent guidance of human beings through the period of their development means that the adult should mould and prepare the child to carry out its work in the world, work which will be good or bad according to the protection of this development. It is this protection of physical and mental development which produces the best types of citizens, and in that sense makes the world better.

Looking at life from this point of view, it is manifestly the duty of adults to assume as a sacred trust transmitted to us by our ancestors through long ages of surviving harmonious tissues, the responsibility of perfecting the process of human development. We ourselves have passed through the fire of impending destruction more or less unscathed by loss of physical force or of mental vigor.

To protect wisely necessitates adequate knowledge and the acquisition of how to use that knowledge intelligently. More than all, however, nature has impressed upon us her demand amounting to a *command* to acquire this knowledge according to our opportunities and our capacities.

In order to avoid the dangers which environ young human beings during their period of helplessness we must appreciate what these dangers are. They are many, and approach on every side. A never-ceasing onslaught of ignorance and violation of nature's laws is continually undermining the infant's outworks of defence, and making possible an entrance into the very centers of its living citadel.

Countless organisms, ravenous to devour tissues and to cripple functions, lead on to either death of a part or, when a complete victory is obtained, to permanent death.

This means the death of a living human being, who, during life, has been representing a most wonderful and astounding combination of anatomical and physiological principles and truths.

There is no doubt but if proper use were made of the knowledge which we already possess of nature's simple truths, and of nature's attacking and repelling organisms, and that also if human beings all over the globe could be induced to study and grasp this knowledge, that disease at its very onset could be throttled at the outworks of the infant's defence.

There is no doubt also that the death-rate of human beings could be lessened to almost a minimum in comparison with what now prevails. While the human race is at present especially vulnerable to disease on account of its own apathetic lack of interest in its prevention, it could in a comparatively short period of time become almost invulnerable to the attacks of organisms which must grow weaker and weaker, and finally die if they cannot gain ingress to the living tissues which are their source of maintenance.

Under these conditions is it not well for us to overcome any distaste which we may have for acquiring such knowledge, and unselfishly by self-sacrifice to bequeath to our descendants at least the beginning of an inheritance of healthy, strong tissues trained to resist the inroads of disease?

Think what this would mean to those whom we would spare the unnecessary trials and sorrows from which we have suffered through the ignorance and lack of common sense of our ancestors. Think what it would be to save our descendants from the ravages of such diseases as tuberculosis and syphilis, and from the immense number of deaths which result from infantile malnutrition. Yet this is in a great measure possible.

You should understand that in early life there are a number of distinct conditions, which represent different classes of disease. There are, however, two prominent divisions of disease which impress upon us the importance of understanding the general principles upon which we base our belief that many diseases can be prevented.

One of these divisions is represented by what is called *congenital disease*, something with which the individual is born.

The other is called *acquired disease*, or something which first affects the individual at some period after birth.

In order, however, to appreciate what is covered by the congenital class of diseases we should know that disease does not always mean a lack of health in the tissues.

It is possible to have diseased tissues before birth as well as after, but the great principle which, in most cases, represents congenital disease is the question of development, or rather lack of intra-uterine development.

Before an infant is born there must exist normally certain conditions of the organs and tissues, but if these same conditions continue after the infant is born, they are no longer normal conditions, but disease.

As one of the many instances which show this to be true, note that the skeleton of the infant before birth is made up mostly of cartilage with very little bone. If after birth this same cartilage does not rapidly develop into bone, although in the sense of healthy cartilage it remains healthy, yet it is an abnormal condition after birth, and in this sense a perfectly healthy cartilaginous condition becomes a disease. This is because the time for its remaining cartilage has ceased, and it now constitutes a congenital disease. Again, before birth the lung has no vocation, for the oxygenization of the blood takes place through the mother's placenta. Under these conditions the lung is like a piece of compressed sponge. At birth, the blood having lost its placental supply of oxygen, the lung should become active, instead of remaining quiescent, and take up its vocation of supplying oxygen to the blood. The

compressed air-vesicles expand when the air enters the windpipe, and become like an expanded sponge. If these air-vesicles do not completely or partially expand, although the lung-tissue may be as free from disease as it was just before birth, yet this collapsed condition of the air-vesicles now becomes a *congenital disease*, atalectasis, and the infant dies from lack of oxygen.

Again, during intra-uterine life the blood is distributed by an entirely different mechanism than after birth, and there are additional openings in the heart which form a part of this mechanism. At birth, unless these openings close and the mechanism of the circulation changes to correspond to the changes in the lung, this normal condition of intrauterine life becomes a *congenital* disease of the heart.

These congenital diseases we have no means of preventing, and in this sense are somewhat helpless in dealing with them. The knowledge which we have of congenital diseases is of vast practical importance, however, because many lives may be saved in the very beginning of extrauterine life by promptly recognizing and dealing with them. For instance, an infant is born with a partially collapsed condition of its air-vesicles. Prompt action in making the air-vesicles expand may save its life.

In some cases, through a temporary interference with the circulation, owing to a temporary continuation of intrauterine heart conditions, the infant may die unless this is promptly recognized and treated.

In like manner infants who are born before the usual time have a lower vitality than should be possessed by them in order to resist the influence of the external world to which they are exposed at a period of development which was not intended to resist these external influences.

Infants of low weight and poor vitality, even if otherwise normal and born at term, may die from exhaustion, and therefore need special care to keep them alive.

What does this teach us? The giving of the bath at once in these cases, instead of wrapping them temporarily in cotton-wool moistened with warm oil, surrounding them with warmth beyond the usual temperature of the room, and guarding them from too much light and from the various noises of the outer world for which their nervous systems are entirely unprepared, should be carefully avoided.

All this requires on the part of the physician an absolutely exact knowledge of the individual infant. The parents should recognize that in every infant at birth such emergencies may be present, that infants should not be treated by "rule of thumb," and that what is supposed to be proper for infants, as a whole, is often not fit for the individual.

Something to be especially considered in dealing with disease of any kind, whether congenital or acquired, is to look upon each human being as an individual, and not as merely one of a class where all should be treated alike when having the same disease. As soon as the world recognizes that general rules for the management of early life are, as a whole, desirable, as a nidus around which individual truths may crystallize, the more intelligently will the conditions both of health and disease in early life be dealt with. Therefore, individualism in contradistinction to empyrical class division constitutes our main reliance for the betterment of the child life of the future. The people in general should know enough about the general rules of health and life, disease and death, to intelligently guard the individual infant until they can refer for further knowledge to those whose life work it has been to acquire the more precise knowledge of facts relating to individuals.

It is not alone in intrauterine life that development plays such a great rôle in disease. As soon as an infant is born, even if it is healthy, the question of what changes should take place according to its age immediately arise, and a knowledge of these changes is of the greatest importance for the prevention of disease.

Just as the proper development of the bones and tissues in intrauterine life determines whether an infant is healthy at birth, so must this same question of development be taken into account through the whole period of infancy and childhood to determine normal or abnormal conditions. What is normal at birth become abnormal if it is found at one month of age, and again at six months, or twelve months, or two years. That is, there should be a continual change in the tissues, month after month and year after year, until the child attains the completed growth of the adult.

We have, therefore, another class of diseases, which we call diseases of *development*. An instance of this developmental class is the size of the stomach, which has a capacity at birth which is normal for this early stage of extrauterine life. This capacity, however, would be abnormal at two or three months, while the capacity at two or three months would again be abnormal at eight or ten months, and so on up to the full development which is normal when the final growth has been reached.

This developmental sequence is found in all the tissues and organs of the body, and makes the developmental class of diseases an entity and entirely separate from disease as it appears in adult life.

Lack of proper development, then, constitutes disease through all the stages of a child's life, although the various tissues do not necessarily show any diseased conditions whatever. This class of diseases needs treatment for the general health, but *time* is the chief factor in their *cure*.

What anatomical and physiological truths does nature present to us when we compare the different stages of development, and what deductions can we make from these truths?

The head at birth has normally an open posterior and anterior fontanelle. At six weeks the posterior fontanelle should be closed, while if still open at eight or ten weeks, it points towards disease. In like manner, while an open anterior fontanelle is normal in the first eighteen to twenty months, it should be closed at twenty-four months, and therefore, if open, shows disease. Our knowledge, therefore, of normal anatomical conditions at once aids us greatly in determining exactly what diseases are present. For instance, with an open anterior fontanelle at twenty-four months, we are led to look for rhachitis and hydrocephalus. In like manner, we know that normally at birth, and during the first year, there should be very little angle to the ramus of the lower jaw, and that it should be comparatively straight when compared with the square, angular jaw of the second and third years of life. What does this teach us? It indicates that the jaw in the first year of life is intended for sucking, not for mastication, and, following from this, for a liquid diet. On the other hand, the square jaw of a later period indicates the power of mastication, and that solid food should be given. On examining a child's jaws by the x-ray, it will be seen that there are two sets of teeth: the first set, with the second set above them. It is manifest from this arrangement of Nature's that the first set, when loose, should not be removed any sooner than possible, and a dentist's advice should be taken as to what the effect on the tooth of the second set will be if the first set is removed too soon. Much future annoyance, and even deformity, requiring the extraction of some of the teeth of the second set, can be obviated in this way.

Again, if instead of sixteen teeth (the normal number at twenty months) there are only eight, this means faulty nutrition and usually the disease rhachitis, while in like manner, if instead of the normal sixteen second teeth at nine years, there are only eight, we again are led to believe that the child has, or has had, some disease affecting its general nutrition.

The slight amount of amylolytic (changing of starch into sugar) power shown by the infant until towards the end of the first year, warns us that starch should be given in very limited amounts or not at all until this amylolytic function has at its proper time been developed.

At birth the vertebræ are mostly cartilaginous, and the spine, therefore, very flexible and unstable, and not strong enough to support the superencumbent head. This is normal in the early months of life, but if this condition continues into the second half of the first year it becomes abnormal, as the vertebræ should by that time have ossified sufficiently to support the head and

also to allow of the sitting posture. In like manner the legs are normally bowed at birth, and normally grow straight up to the time when they are intended to support the body and to be used for walking in the second year. Bow-legs, therefore, normal in the first year, become abnormal in the second year and point to a lack of nutrition of the bones or to a very heavy infant being allowed to walk too soon.

The eye in the early weeks of life normally does not correlate sufficiently for the infant to have objects fixed on the retina, and the infant does not see definite objects, but only light. At a later period this would be abnormal and significant of disease.

The blood in the newly-born is also normally undeveloped and shows conditions which, if present in the later years of childhood, are significant of disease, often of a serious nature.

All these instances of Nature's truths are significant in that they tell us much that is of value in the question of prophylaxis, which is quite as important in disease as are treatment and cure when disease is established. They teach us also that the various functions, whether anatomical or physiological, should never be forced into use before they are developed sufficiently for such use, and, again, that they should be brought into use when they are ready to be used without strain. Here again, however, the individual should be studied as an individual, and we should understand that, while we have an average development to act as a guide, there are instances where an individual may be normal in its development and yet be either below or above the average, and therefore needs its own individual treatment.

Witness the capacity of the stomach, which may differ in infants of the same age and yet be so normal for the individual that a greater or less quantity of food than the average should be given if the digestion is to be carried on properly.

Finally, of the greatest importance for the individual's well-being is the proper management of the nervous system at all periods of infancy and childhood. The nervous system is undeveloped, both as to its functions and its stability throughout the whole period of its growth. It is extremely sensitive to changes of light, sound, heat and cold, and this sensitiveness is especially evident the younger the individual. Protection from extremes is absolutely necessary if human beings are to live and be healthy, and if infancy is to develop into childhood and childhood into adult life normally. Young infants in the early days of life, where a careful physical examination has been made and shown them to be normal, have, after exposure to inclement weather and unusual sounds and commotion, been known to die, and the postmortem to show an absolutely normal condition of their tissues. Many a sensitive child's

school life has been wrecked for months by unwise excitement in theatres and by the nervous surroundings of their home life due to injudicious and nervous parents.

The disregard of all these questions of early life, and a lack of intelligent dealing with them, simply add to the high mortality which must necessarily result from the lack of normal development, the low vitality and the lessened resistance which exist in young human beings. If, with the knowledge which we have of the means to save life, we do not use this knowledge to its utmost, we are no better than the Spartans, who destroyed the feeble infants at birth in order to produce a people of the highest possible type of physical development: in other words, a people with the greatest possible power to kill. This Spartan custom, which simply strengthened the power of the strong to destroy the weak, did not recognize, as do we of the present day, the superior importance of brain-matter over muscle.

Even with the superior knowledge of modern times, we must acknowledge that we have no means of judging at birth whether a puny infant may eventually turn out to have the brain of a Newton or a Goethe.

Lack of normal development, then, constitutes one set of diseases.

(To be continued next month.)

CONTUSIONS OF THE ABDOMEN WITH VISCERAL LESIONS.

By D. TOD GILLIAM, M.D.
COLUMBUS, O.

The frequency of abdominal contusions, the difficulty of recognizing attendant visceral lesions, the almost uniformly fatal results from tardy or neglected surgical interference in the latter class of cases, and the unsettled policy of surgeons in dealing with such cases make it a subject of engaging interest. This applies not only to the surgeon, but to the general practitioner as well, for not only do many cases fall primarily into the hands of the latter, but, as the family physician, in whose judgment, skill, and personal interest the patient and his friends have learned to repose, his say-so will often be taken in preference to that of the surgeon, and it will be left for him to determine the conduct of the case. It is he, then, upon whose shoulders the responsibility rests. And what a responsibility! To stay the hand of the surgeon when a human life will pay the forfeit is little less culpable than manslaughter.

The difficulty lies not so much in what to do with the vesiceral lesion, for here there is practical unanimity of opinion among all progressive

surgeons, but how to determine whether or no a visceral lesion exists. The signs and symptoms of an intra-abdominal lesion are not only at times misleading, but quite frequently wanting, so that a most serious and fatal lesion may be attended by no symptoms until general peritoneal infection sounds the knell of lost opportunity. These are the cases that lull the medical attendant into a sense of security that is as fatal as it is false. *Per contra,* an abdominal concussion may be followed by most alarming symptoms when no visceral lesion exists. The external signs of an abdominal contusion may be absent, there being not the least indication on the surface of the abdomen, while at the same time the internal organs may be most seriously affected, even to the extent of complete disintegration. Instance the widely exploited cases of "wind concussion," so-called, occurring during the Crimean war. The generally recognized signs and symptoms of abdominal contusion are pain, shock, vomiting, blood in the vomitus, stools or urine, arrested peristalsis of the bowels, muscular rigidity of the abdominal walls, tenderness, localized or general, and disappearance of the area of liver dullness, the latter appearing early is among the most valuable of symptoms, but as a late symptom and to be classed with the evidence of peritoneal infection. I shall not consider these *seriatim,* for there is little to be learned from them. Those upon which I would lay most stress as indicative of visceral involvement are:—

(1) Prolonged or increasing shock.

(2) Persistent vomiting.

(3) Arrested peristalsis.

(4) Muscular rigidity of the abdominal walls, general or localized.

(5) Tenderness on deep pressure.

(6) Blood in the vomitus, stools or urine.

Of these Nos. 1, 4 and 6 are most to be depended on. There may be no vomiting or vomited blood from a ruptured stomach, the contents escaping into the peritoneal cavity. The more serious the trouble, the more likely this is to be the case. There may be no blood from a ruptured bladder for the same reason. The bladder should always be catheterized at the first examination.

Given a case of recognized visceral lesion, what is the surgeon's duty? Clearly and emphatically, to go in, seek for, and repair the lesion. But in the absence of positive proof of such lesion, what then should he do? Give the patient the benefit of the doubt in all cases where any one or several of the indications listed above render it probable that such lesion exists. Not only this, but the nature of the accident is to be taken into consideration. If it be such as would probably produce a rupture of the viscera, this should be

a determining factor in the conduct of the case. It is surprising how little it takes at times to produce a rupture of the intra-abdominal viscera. Falling out of bed, running against a chair, a tight squeeze, or a smart blow have each and severally been followed by fatal rupture of the viscera. A distended stomach or intestines favor such accidents. At such times, especially under gaseous distention, the accident may be attended by an explosive sound and the patient experience a sensation of something having bursted inside. A wheel passing over the abdomen will sometimes tear a movable from a fixed portion of the bowel as at the junction of the jejunum with the duodenum.

It is not to be denied that the death-rate from neglected visceral rupture is appallingly great, the recoveries being exceedingly few. It is equally true that with and in spite of operative interference, especially where a systematic search for the seat of the lesion has to be made, the mortality is still high. In view of this latter and of the uncertainty in many cases as to whether visceral lesion exists, many surgeons and most general practitioners prefer to treat all doubtful cases expectantly. It would seem, then, that we are in a dilemma and must continue to grope blindly as our predecessors have done, consigning many valuable lives to untimely graves because of inaction on one hand or inopportune interference on the other. Happily there is a way out of this, which, though not infallible, is applicable to so large a number of this unfortunate class as to be a veritable boon. And happily it is a measure almost devoid of danger. I refer to the simple, exploratory abdominal incision, to determine whether or no a visceral lesion exists. It is a well-demonstrated fact that any fluid or extravasated matter in the peritoneal cavity will almost invariably present itself under the line of incision where the cavity has been entered, being forced there by the intra-abdominal pressure, and it is on this principle that abdominal drainage can be effected against gravity. I have seen a large collection of pus in the pelvic cavity drained through an opening in the belly so completely that at the autopsy not a spoonful remained. It follows, then, that in many cases at least a simple incision through the abdominal wall will be all that is necessary to reveal even a small extravasation through a ruptured viscus. Of course, there will be cases in which the rupture is so minute as to preclude extravasation at the onset, and such will be overlooked. In doing this little operation, for, as a rule, a short incision will be as effectual as a longer one, it is absolutely necessary that all bleeding be checked before opening the peritoneum, lest some of the blood should find its way into the cavity and obscure the findings. When and where shall the exploratory incision be made? At the earliest possible moment, for in this lies the salvation of the patient, and in the absence of

contraindications it should be made in the median line between the umbilicus and pubes. The reasons for this are briefly that if the patient has been in the erect or sitting posture after the receipt of the injury, as is often the case, gravity will have carried the extravasated matters to the lower abdomen, and, moreover, it is quite usual, if not the rule, for fluids to settle toward the pelvis. The incision is not only valuable in determining the presence of extravasated matters, but will often indicate their source and thus facilitate the search for the lesion and diminish the risks of the operation; for oftentimes the chief risk is in the prolonged handling and exposure of the viscera in the search for the lesion. The presence of bile will point to the gall-bladder, the presence of urine to the urinary bladder, ureter, or kidney, the presence of stomach-contents to that viscus, and so on. Unmixed blood is apt to come from some solid viscus, as the liver or spleen. It is well to remember that the relative frequency of rupture of the constituent parts of the alimentary tract are the small intestines, stomach, and large bowels in the order named. In case no peccant matter presents under the incision, I would introduce a sponge on a long-handled forceps into the pelvis, guided by a finger, and observe if any foreign matter clings to it. Considering the innocuousness of this little operation and the large possibilities as a life-saving measure, it should become an established rule in all cases of reasonable doubt, and should be insisted on by the medical attendant, be he surgeon or general practitioner.

THE DIAGNOSIS AND TREATMENT OF CONGENITAL SYPHILIS.

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Many a case of congenital syphilis is not recognized by the examining physician, simply because it does not present all the text-book symptoms of that disease. A further reason why more cases of congenital syphilis do not come to light is the lack of a proper method of physical examination of infants and young children.

First of all, then, for the proper and correct diagnosis of syphilis in babies, a thorough physical examination of the infant should be made. It is surprising to what extent evidences of syphilis are found in the routine examination of infants and young children in any large children's clinic. The child should be undressed, and by "undressed" I mean naked. Many a syphilitic eruption, enlarged spleen or liver is overlooked simply because the

examining physician does not insist upon having the little patient undressed. The child should be examined in a good light, preferably daylight. A full history should be taken of every case of illness in a baby when seen for the first time. Fully as important as is the history of the child itself is the history of both parents. Both parents should be questioned, separately if possible, and see if you cannot elicit the history of miscarriages or stillbirths from the mother, or a history of chancre from the father. Having gone fully over the history of the parents, we come to the examination of the child itself.

What symptoms are we to look for in the infant or child which would suggest the presence of hereditary syphilis? Great stress is laid by many of the text-books, when speaking of hereditary syphilis, on bony changes, eruptions, and extreme wasting; but the average case of this disease, as found in the everyday examination of babies, does not present all of the above three symptoms, nor in many cases any of them, so that the student is often misled, and a case of hereditary syphilis is entirely overlooked simply because none of the above symptoms were present.

What, then, should we look for to establish our diagnosis of hereditary syphilis in a given case? First, the symptoms of this disease usually occur in the second to fifth week of infant life. From the examination of the records of many cases of this disease which I have seen in different clinics in this city, the first symptom which manifests itself in a baby with hereditary syphilis is that of

Restlessness.—The mother will tell you that the baby is extremely restless. She cannot understand it, as this baby is so different from her other babies. He sleeps poorly, cries a great deal, and seems to be, on the whole, an excessively uncomfortable baby. When a mother gives you a story like this, immediately think of congenital syphilis as a possible diagnosis.

Snuffles.—A baby suffering from hereditary syphilis usually has the snuffles from birth. The mother will tell you that her baby always had a cold in his head—in fact, he was born with a cold in his head—and many a mother will advance the theory as explanatory of this chronic "cold," that the attending accoucheur left the baby's head uncovered too long immediately after delivery, and the infant received his chronic cold in this way. The snuffles may not be continuous; some days the baby may be entirely free from it, again the next day to begin the snuffles. There may be a slight mucous or muco-purulent discharge from the nose, or there may be dry crusts in the nostrils, and practically no discharge at all. The baby is made extremely uncomfortable by his inability to breathe through his nose, and he therefore nurses poorly. Adenoids, I believe, rarely play a part in causing

a blocking of the nasal canal in very young infants. Many cases of hereditary syphilis have been treated for adenoids, with no beneficial effects whatever, so that when you hear of or are called to see a case of chronic snuffles in an infant, banish the thought of adenoids and make a careful examination for other symptoms of congenital syphilis.

Hoarseness.—The entire respiratory tract is usually chronically inflamed in cases of hereditary syphilis and causes attacks of hoarseness. These attacks may come on every day, or there may be longer periods of absence of hoarseness. Possibly the mother will tell you that her baby has been hoarse since birth. There may or there may not be a slight cough present.

Enlarged Spleen and Enlarged Liver.—In all the cases of hereditary syphilis which have come under my observation, both the spleen and the liver have been enlarged. The normal liver in infants comes down about an inch below the border of the ribs. So do not let this fact mislead you in your diagnosis. On the other hand, in cases of hereditary syphilis the border of the liver will be felt much lower down. A spleen that is palpable, is to be considered enlarged. In palpating for the liver and spleen, the child should be undressed and lying on his back on a table or the lap. The examining hand should be warmed before touching a baby's abdomen. Gradual pressure with the tips of the fingers should be made over the site of liver and spleen. The spleen in some cases may only be felt when the baby takes a deep inspiration, just preparatory to an outburst of crying. Do not make too deep pressure in palpating for the liver and spleen, as it is owing to this fault that many enlarged spleens are not felt.

Enlarged Epitrochlear Glands.—In about all the cases of hereditary syphilis that I have seen, the epitrochlear gland of one or both arms was enlarged. This is a very valuable sign in diagnosing the disease. The gland, if enlarged, is best located by feeling for it while the baby's elbow is flexed at right angles.

Eruption.—The eruption occurs as one of the earliest symptoms; sometimes snuffles and rash occur together. The eruption consists of small, dark red spots. These spots are about a quarter of an inch in diameter and vary in size. The absence of itching is a characteristic symptom, as you can see that the baby does not scratch his skin, as there are almost never any foci of infection, such as one sees in an itching infected eczema. The eruption is a general eruption and seldom appears on any one region of the body. These red spots soon change to a dark red, and finally to a copper color. From the first appearance of the rash to its fading is from one to two months. The eruption often becomes scaly after it begins to fade away. Fissures often appear about the corners of the mouth and also around the anus.

About the worst case of hereditary syphilis which I have seen came under my notice three years ago. It is illustrated in Fig. 1, in which the fissures about the mouth may be plainly seen. Mucous patches are also often seen at the junction of the skin with the mucous membrane.

Nails.—In many cases of congenital syphilis a characteristic formation of the nails is seen. They have the appearance of birds' claws and are termed birds'-claw nails.

Fig. 1

Epiphysitis.—Tenderness and swelling of the joints, especially of the shoulder, elbow, and ankle, should elicit suspicion. Oftentimes a baby will have one arm or leg that it will not use, and an incorrect diagnosis of brain or cord trouble will be made where, in reality, the trouble is entirely a syphilitic one.

The above symptoms have been given as occurring in early hereditary syphilis. There are other symptoms which occur in cases of syphilis which may be termed "Tardy Hereditary Syphilis," and are seen in children from four to sixteen years of age. They also may have enlarged spleen, liver or lymphatic glands, especially the epitrochlear. The second set of

Teeth may contain any of the Hutchinson varieties, such as "notched," "pivot" or "screw-driver." The

Bony Changes of tardy hereditary syphilis are manifested in chronic inflammation of the bone, so that various foci of periostitis may be noticed. A syphilitic inflammation of the

Cornea may also occur.

Condylomata are frequently observed in cases of congenital syphilis.

These are seen about the anus and also on the face. Fig. 2 illustrates to what degree they may be present.

Malnutrition.—We now come to a symptom, and sometimes the only symptom, which is of great importance in the diagnosis of tardy hereditary syphilis, and that symptom is malnutrition. Many a case will present noth-

Fig. 2

ing more than some form of malnutrition. The parents will tell you they have a boy or girl seven to fifteen years of age, who always has been thin, who eats fairly well, seems healthy enough, and all the rest of the family are robust and well nourished. These parents cannot understand why this cherished son and heir is not like the others. In cases of malnutrition, where you have exhausted every known method of proper feeding and prescribed fresh air, proper bathing and hygienic surroundings, and notwithstanding a month's or six weeks' trial the child does not respond, always suspect syphilis.

Many cases of malnutrition in children are treated for years with no beneficial effect whatsoever, until they come under the care of some physician who recognizes the probability of syphilis, immediately institutes a form of anti-syphilitic medication and the child is a different child altogether in a month's time. These cases of syphilitic malnutrition are usually hereditary ones, where the father in his younger days had a chancre, and the physician who treated him, told him he was to all intents and purposes cured. He marries and begets a child who suffers from malnutrition. There are none of the text-book symptoms of syphilis present—such as rash, enlargement of the liver and spleen, or bony changes; there is simply malnutrition. There may be enlargement of the epitrochlear glands; there may be Hutchinson's teeth of the pivot, notched, or of the screw-driver variety; there may be the bird's-claw finger nails or toe nails; a history of snuffles in early infancy; a rash a few weeks or months after birth. There may be present an enlarged liver and spleen. So that, given a case of malnutrition in a young child who does not improve after careful feeding and hygienic regulation—no matter whether the father and mother are pictures of health and morality—treat that case for syphilis, and you will be surprised at the result obtained.

Treatment.—Having employed the various forms of mercury in the treatment of congenital syphilis, I have discarded practically all of them except the employment of bichloride of mercury, administered by the mouth. This has been, in my experience, the best method in which to use this drug. Ointment soils the clothing, and is soon discarded by the parents as being too dirty and troublesome. In using the bichloride of mercury I usually administer it in plain water to infants, or in some simple vehicle to older children. Each teaspoonful contains the desired dose of mercury. To an infant I begin by giving $^1/_{200}$ of a grain, morning and night; to a child one to two years old, commence with $^1/_{100}$ of a grain, morning and night, keeping this up for a few days, and then give him the same dose three times a day; then, after a day or two, increase the dose to $^1/_{100}$ of a grain to an infant of six months; or $^1/_{50}$ of a grain to a child one or two years old. If no symptoms of mercurialization are seen which in infants occur in the form of loose, greenish stools, increase the dose slightly up to the abatement of the symptoms or the occurrence of loose, greenish stools. It is impossible to salivate an infant, and the physiological limit to the administration of mercury is manifested by the presence of loose, greenish stools in nearly every case.

Infants bear the mercurials well. When the dose is reached which causes either a diminution of the symptoms of syphilis or loose, greenish stools, hold the patient at this dose until the symptoms of syphilis disappear.

It is oftentimes of advantage in older children to combine iodide of potash in the form of the saturated solution, two or three drops three times a day up to a diminution of symptoms or the production of an iodide rash. It is best to give separate prescriptions for the mercury and for the iodide of potash. The iodide is generally well borne by young children.

After the subsidence of all symptoms the child should be examined monthly for six months, and then every two months for a while, and then every six months until puberty. It is always necessary, to my mind, to give these syphilitic children a one to two weeks' course of antisyphilitic treatment out of every six months until adolescence is reached, and then caution them to be examined twice a year for the remainder of their life. It is quite an easy matter to cure a patient with syphilis, but to *keep him cured* is a far more difficult proposition! Aside from the medicinal antisyphilitic treatment, of course, a regime of proper diet and hygiene should be instituted.

Special Article

THE INFLUENCE OF THE INTERNAL SECRETIONS IN CONNECTION WITH THE USE OF THYROID GLAND EXTRACT IN THE TREATMENT OF CRETINISM.

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The intimate association of the thyroid gland with the pituitary body has been the subject of intense and painstaking physiological study. Literature records physiological workers amongst whom Brown-Séquard and Sajous, besides many others, have done pioneer work.

The adrenals, otherwise known as the suprarenal glands, exert an important bearing on the circulatory system. That they influence the heart and the vasomotor system can easily be seen by a study of the physiological effect of the active principle of these glands, which has recently come into general use. I refer especially to adrenalin, suprarenin, and epinephrin.

Physiological teachings and doctrines are constantly changing. This must be so because very many theories are unsupported by facts, and so it is that what was taught twenty and thirty years ago appears obsolete to-day. This applies more especially to physiological as well as to biochemical experimentation.

Research in the domain of physiology has wrought many changes. *The*

intimate association between the thyroid gland and the adrenals has long escaped detailed study. But physiological chemistry has awakened many new and latent phenomena.

Instead of supplying the absent thyroid secretion, and *by this means regulate the internal glandular machinery,* we find that by supplying the desiccated thyroid gland *we stimulate to reactivity all glandular functions hitherto deemed passive.* What at first appears to be a simple phenomenon turns out to be a very complex problem, for which solution we are indebted to the manifold teachings of Sajous.

Very many functions have been ascribed to the adrenals. Likewise the pituitary has been the subject of guesswork for many years. Sajous has proven the value not only of the adrenals, but he pointed out the center which controls these adrenals to be in the pituitary body. This is a vast step forward, as it identifies a hitherto obscure portion of the anatomy.

In no branch of therapeutics can so much progress be found as one can see in the treatment of sporadic cretinism. To transform a human imbecile backward mentally, and also physically, into a normal being is something that the physician can be proud of. Why is this so? Because we know that we are *supplying a secretion that is lacking in the body, but more than this we did not know until Sajous associated the function of the thyroid gland with that of the hypophysis cerebri, and thus explained that this thyroid secretion governs the functions of the adrenals by stimulating their center in the base of the brain. This center has been identified by Sajous as the pituitary body.*

The pituitary body consists of two distinct structures: (*a*) anterior lobe or hypophysis cerebri, a glandular structure; (*b*) posterior lobe or infundibular body, largely made up of nerve-cells and glandular cells. Removal causes a train of symptoms resembling those caused by a thyroidectomy ending in death.

It is evident that the thyroid gland is, in a sense, the key to the situation. Its absence congenitally or its arrested development during intrauterine life results in sporadic cretinism.

Victor Horsley states that the thyroid gland functionates more actively in the female than in the male, hence it is liable to more sudden variations in functional activity.

It is well known that enlargement of the thyroid is not uncommon in women during menstruation and pregnancy.

What myxœdema is to the adult, sporadic cretinism is to the infant.

"The thyroid arsenic found by Gautier *does* play a rôle in this connection; the skin, nails, and hair of the cretin may have never received their

normal supply, while those of the myxœdematous subject may have lost theirs through the thyroid disorder."

When the adrenals are extirpated, dyspnœa follows. This would imply that the adrenal system in some way controls the center governing respiration.

The adrenals secrete a colloid substance into the adrenal veins, which penetrates the lungs with the venous blood and cannot be traced beyond these organs.

The secretion of the adrenals possesses a marked affinity for oxygen, according to Sajous, who arrives at the following conclusions:—

"1. The thyroid gland supplies the blood with a secretion which has for its object to sustain the functional activity of the anterior pituitary body.

"2. The anterior pituitary body is directly connected with the adrenals through the spinal cord, the thoracic ganglia, the splanchnic nerves, and the semilunar ganglia of the sympathetic nervous system.

"3. *The thyroid gland, the anterior pituitary body, and the adrenals are functionally interdependent,* and constitute a system through which cardiac action, respiration, and general cellular oxidation are maintained.

"4. The thyroid gland sustains the normal functional activity of the anterior pituitary body, while the latter, in turn, maintains the normal activity of the adrenals.

"5. The functional activity of the anterior pituitary body is increased when the blood contains an excess of thyroid secretion or sufficiently-active toxics: bacterial toxins, poisons, physiological toxalbumins, etc., to compromise the general cellular integrity of the organism.

"6. The functional activity of the adrenals is increased proportionally with that of the anterior pituitary body when the latter's activity is increased from any cause.

"7. The functional activity of the anterior and posterior pituitary bodies is *passively* decreased when the blood contains an insufficient proportion of thyroid secretion or is inadequately oxygenated, or when from any cause its intrinsic metabolism is reduced or impaired through deficiency of any of its molecular constituents.

"8. The functional activity of the anterior pituitary body is *actively* decreased when the blood contains a sufficiently active toxic of any kind, bacterial toxin, poison, etc., to induce excessive metabolism of its intrinsic cellular elements, and thus cause exhaustion or molecular metamorphosis of the latter.

"9. The functional activity of the adrenals is decreased proportionally with that of the anterior pituitary body, whether the reduced activity of the latter be due to active or passive pathogenic factors."

Hypertrophy of the suprarenal tissues has been found after the injection of small quantities of diphtheria toxin in guinea-pigs. In one animal the adrenals were four times their normal size. Thus it appears that the adrenals show excessive activity when toxins are injected into the organism. This view is supported by the investigations of Sajous.

Attlee found that in children dying from marasmus there was marked fatty change involving the suprarenal bodies.

"Symptoms of poisoning are really manifestations of overactivity or of insufficiency of the adrenals, and that the functions of these organs may be stimulated, inhibited, or arrested in two ways:—

"1. By a direct action of the toxic agent upon their cellular elements, and most liable to occur in acute infectious and chronic diseases and intoxications.

"2. By an indirect action upon the vascular supply of the organs through a primary action upon the centers of the nervous elements that control the adrenal secretion, and most liable to occur in acute intoxications by toxins, venoms, vegetable and mineral poisons.

"That a simultaneous action upon both the suprarenal elements and the centers of their nervous supply may occur, however, is probable.

"3. The period between the two general stages, stimulation and depression, seems to coincide with that considered in the course of acute disease as the crisis.

"As toxic effects are alone involved in the foregoing processes, it is probable that:—

"4. The adrenals are potent factors in the efforts of the organism to prevent the destructive effects which this selective affinity engenders, when poisons, in sufficient doses to do harm, are introduced into the circulation."

Buhecker, in his inaugural dissertation on the pathology and physiology of the hypophysis cerebri, states that from a study of his cases he finds an intimate relationship between affections and tumors affecting the hypophysis and the thyroid gland, so that disease in one always showed an abnormality in the other. In this experimental study he is also supported by Rogowitsch. Boyce and Beadles, of the Department of Pathology, University College, London, '92-'93, describe two cases of myxœdema with atrophy of the thyroid gland and enlargement of the pituitary body. They also report another case of sporadic cretinism in which they found the hypophysis abnormally enlarged and the thyroid gland absent.

One word concerning the diagnosis of sporadic cretinism. There are a few conditions met with in children that may be mistaken for cretinism: (*a*) achondroplasia, (*b*) Mongolian idiocy. The Mongolian type of idiocy is fre-

quently seen. There is a depression of the nose, also marked protrusion of the tongue similar to cretinism. There may be delayed dentition and backwardness in development. The Mongolian idiot is good-natured, pleasant, smiling, and does not have the thick, coarse hair. The skin manifestations are always absent. A few doses of thyroid extract will at once decide the diagnosis if doubtful, as the cretin always responds to thyroid extract, but the Mongolian idiot never responds.

Achondroplasia must not be mistaken for cretinism. This disease is characterized by arrest of growth of the diaphesis of the long bones, with enlargement of their epiphyses. The limbs are short and stunted. The bridge of the nose is depressed. The hands and feet are short and thick. The relative shortness of the limbs in contrast to the length of the trunk is marked even in early infancy. The subnormal temperature is only met with in cretinism, and the thyroid gland is not absent as it is in a cretin.

True cretinism responds to thyroid extract. Achondroplasia does not.

One of the earliest symptoms met with in sporadic cretinism is constipation. This constipation is chiefly due to muscular atony, which prevents normal peristalsis from taking place. Another equally important point in conjunction with the constipation of a cretin is the absence of intestinal secretions. This absence of intestinal secretion is evident because the stool is hard and dry, and usually of the scybalous type. It is noteworthy that as soon as the desiccated thyroid gland is given to a cretin, the stool is softer and there is an evidence of intestinal lubrication, due to the activity of the intestinal glands. Another favorable symptom noted during the successful thyroid treatment of cretinism is the restoration of the sweat-glands. I have elsewhere (in my text-book on "Diseases of Infancy and Childhood") called especial attention to the influence of thyroid extract on metabolism in general, and on the growth of the long bones previously stunted. A marked effect is also noted on the teeth. Teeth, if present in a cretin before thyroid extract is given, usually decay. Teeth appearing after the stimulus of the thyroid gland extract remain firm and strong.

I have previously alluded to the physiological relationship that the thyroid gland bears to the adrenal gland, and equally so to the relationship that the thyroid gland bears to the hypophysis cerebri. *When one studies the relationship that these glands bear to one another, then we recognize the importance of Sajous's observations in conjunction with the stimulus transmitted direct from the pituitary.* This reawakening of an imbecile and a stupid brain to one of intelligence is more wonderful, in a sense, than the specific effect of the antitoxin treatment in diphtheria.

One word of caution concerning the toxic effect due to an overdose of thyroid extract. It is very important to study the physiological effect of thyroid extract, just as we would the effect of drugs in any case in which a disturbance of the circulation exists. The stimulus exerted by the thyroid extract on the vascular centers frequently causes flushing of the face and marked restlessness, associated with rapid pulse-rate. We should always be on the lookout for peculiar susceptibility, and more especially for idiosyncrasies regarding thyroid treatment.

Five grains of the desiccated thyroid gland may be given in divided doses in one day. This is an equivalent of one-sixteenth of an average sheep's thyroid gland. Some cases will respond to half this dose, while others may require more than the above-named five grains during twenty-four hours. The first evidence of too large dosage is evidenced by gastro-enteric disturbance with vomiting and diarrhœa and fetor *ex ore*. There may be abdominal pain and tenderness, besides very rapid loss of weight. The examination of the blood will show marked destruction of the red corpuscles.

In addition to the simple method of thyroid feeding by the use of the desiccated gland in tablet form, we find equally efficacious results reported by the use of the fresh and finely chopped thyroid gland, fed daily or every two days by mouth. The difficulty of obtaining fresh sheep's thyroid gland is one of the main objections for the generalization of this plan of treatment.

Recently in France, and later in Austria, clinical reports concerning thyroid skin grafts have been published. One of these cases, operated by Professor von Eiselsberg at the Children's Hospital in Vienna, was seen by me this year. The results of this method of treatment will be the subject of another contribution later on. In the short space alloted for a cursory review of this subject many important points must necessarily be omitted. The student, as well as the up-to-date physician, will find a mass of information bearing on complex problems in medicine which have been hitherto unsolved. In his book on "The Internal Secretions and the Principles of Medicine" Sajous solves many knotty problems.

Some clinicians have prescribed iodine, and lately the iodides as a substitute for thyroid. This was based on the belief that because iodine is present in the thyroid gland, that its absence may possibly cause the profound systemic disturbance so well recognized in the case of sporadic cretinism. Prolonged trial of the iodides has proven the fallacy of this theory. It is fallacious to presume that because the proteids form one part of milk, we can substitute this one ingredient as an element of nutrition, and then expect to find proper metabolism fully established. It takes very little reasoning to

see the inconsistency of such a supposition. In like manner it is the thyroid gland or its secretion, and not a part of the latter, that must be given to start the associated glandular activity if the same has been dormant.

Editorial

NOTE ON HEADACHES.

These are ills from which many people suffer and from which they would gladly get relief, if possible. There are all grades, as we know. With some, more or less continuous, and yet not sufficiently severe at any time wholly to incapacitate from work; others are continuous, with exacerbations; others still, and here we have the so-called "migraine," which recur paroxysmally at more or less regular periods and with greater or less intensity.

How shall we manage them effectually? To begin with, the etiology must always be considered and the cause banished, if good results are possible. If it be a blood poison, that must be neutralized or eradicated. Thus anæmia must be cured, gout or rheumatism specifically treated as far as may be, febrile conditions ameliorated, and then with proper time the patient recovers —it may be altogether, it may be only for a time. Of course, if an alcohol habit be marked, it should be gotten rid of, and tobacco excess moderated. Lead-poisoning of certain trades, manifest malarial cachexia, insufficient renal elimination, with premonitory headache of uræmia, are all to be properly treated, or else headache continues. When syphilis is present and there is nocturnal headache with insomnia, iodides in increasing doses are our mainstay. And now, for the numerous reflex causes in nose, pharynx, uterus, ear, digestive disorders, they are all to be remedied properly, if at fault. Nasal obstruction, adenoids, and hypertrophied tonsils must be removed. A sagging or retroverted uterus should be raised or replaced in normal position. Errors of menstruation must be corrected by general and, in minor degree, by local measures. But when we reach digestive disturbances, acute or chronic, we touch really the keynote of very many headaches. An error of diet, some special food, or merely a surfeit of too many foods, will give a headache, which five grains of blue mass, followed by a saline draught, will alone relieve effectually and rapidly. A neuropathic condition, such as described as neurasthenia, is shown to be the efficient cause of very many, indeed the greater number of miserable headaches. The most prevailing symptom accompanying the headache is disordered digestion—dyspepsia, constipation, diarrhœa.

Proper neutralization and elimination through the digestive tract can usually be of primary and greatest service. And here, particularly, we would lay great stress upon the sour milk diet and the moderate use, morning and night, of sulphate of soda.

When we come to relieve migraine, we can do little more or better. No treatment will surely prevent the return of the paroxysms, simply because we have here to do with a constitutional neurosis, in which heredity is the ruling power. Alas! for the throat specialists, the gynæcologists, the oculists, the otologists, who proclaim cures with the knife or with other local means. Much may be done by curing a defective organ by operation at times, or by topical applications frequently, to diminish the number and severity of attacks of hemicrania; but a permanent and absolute cure is quite another thing, and to ring true and fair to our patients, they ought to know it. In most cases of sick headache, the final and only appeal left us is the hypodermic of morphine, unfortunately.

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PATHOGENY OF CRIME.

Dr. Arnold Lorand, of Carlsbad, Austria, delivered, on April 12, 1907, a most suggestive and instructive lecture before the Medico-Legal Society of Philadelphia.

He outlined the clinical relationships between disturbances of mentality, morbid or criminal impulse, and underlying states of exaltation and depression in the ductless, or "blood glands," as he calls them. He emphasized the fact that loss of equilibrium in these great regulator mechanisms, which Sajous has defined to be the adrenal system (adrenals, thyroid, pituitary body, etc.), constitutes a powerful factor in the life processes, but also in that complex entity, the mind, the consciousness.

Upon variations in vascular tension, readily observed but hitherto insufficiently explained, depend a diversity of psychic states. Remedies should be applied along these definite causal lines. In forming opinions on those who exhibit vagaries of intelligence and impulse, both official and public, these dominant influences should be reckoned with. Indeed, the trend of opinion sets more forcibly toward the view that insanity is explainable wholly upon a basis of physical derangements, and hence remediable in so far as cellular regeneration is possible. We present the stenographic report of the lecture, with such correction as the associate editor is capable of supplying. It is hoped

this may meet with Dr. Lorand's approval, as he sailed almost immediately after delivering his lecture.

It is pertinent to call attention to the large, the vivid interest shown by European physicians in the practical importance of possessing a full knowledge of the physio-pathogeny of the ductless glands, and the significance of their internal secretions. In this country it is astonishing how indifferent are many of our foremost teachers to this great question—an indifference which does not tend to increase the confidence of the general profession either in their scientific acumen or in their devotion to their country's position in the world of science.

There are two great barriers against crime—free will-power and sound reason. When a man possesses full volitional power he is able to control his impulses, his actions and passions. At the same time, if he has sound reason he is able to distinguish right from wrong and to reflect upon the consequences that his crime might bring about. Only such persons are responsible who commit crime voluntarily and are aware of what they are doing wrong.

The function of the thyroid gland, and especially its alteration, plays an important part in the pathogeny of crime. When the thyroid is removed or degenerated, there is a resulting effect upon the whole cerebro-spinal nervous system. Mentality thereupon undergoes a change. In myxœdema we find melancholia; the individual has not free will-power and the reason is not perfect. The individual is therefore more liable to commit actions which are wrong. Myxœdematous persons frequently exhibit delusions of persecution. On the other hand, in Graves's disease, which is a manifestation of hyperactivity of the thyroid gland, there is exaltation of mentality.

Insanity and criminality stand in close relationship, the difference being mainly one of degree. In Graves's disease we often find the symptoms of hysteria and sometimes of neurasthenia. Hysteria also bears a close relationship to criminality. In a typical case of Graves's disease there is a symptom-complex very like drunkenness. Chloroform excites the function of the thyroid gland, which is evidenced during partial narcosis. Alcohol acts upon the thyroid gland and produces increased activity, with phenomena much like drunkenness. Graves's disease, drunkenness by alcohol and by choloroform can thus be shown to be similar phenomena.

Alcohol is one of the most important factors in the pathogeny of crime.

In infectious disease, especially when accompanied by delirium, there is an alteration of the thyroid gland. In marked disturbance in the integrity of the thyroid, conditions like insanity and criminal acts may occur.

The sexual glands and the thyroid gland stand in close relationship.

Whenever the sexual glands are altered, the thyroid gland is altered too. During puberty this is seen in the swelling of the thyroid gland. We may reasonably infer from this fact that alterations of mentality will arise. This is seen especially in instances of girls wandering away from home. Alterations in mentality are also noted during pregnancy. These conditions of alteration of the mental system, upsetting the equilibrium and even-mindedness, the balanced mind, produce diminution of the will-power and of the reasoning faculties.

The injection of the extract of the ovaries or testicles is well known to act as a tonic. Ablation of these organs results in depression.

Castration in man produces melancholia. After castration in women there is seldom a case in which nervous symptoms, alteration in personality, have not taken place.

In deciding the degree of responsibility in the case of a woman who has committed a criminal action, the question must be considered whether she was at the time in some physiologic or pathologic condition. I knew of a case of kleptomania in a woman who was really honest, but every time she become pregnant she would steal. If I were a criminal expert, administering justice, I would not condemn such a woman to jail. After every hyperactivity of the sexual gland there follows exhaustion. In the best interests of the preservation of the race, maintenance of virtue is a necessity in woman. Hysteria is a condition found in connection with alteration of the sexual glands.

In forming decisions in criminal actions, judgments formed on the impulsions of women should be different from those of men. The female thinks differently from the male. They are extremely suggestible. They reason differently, are not logical, only instinctive. Female painters paint in a different way from the male. Rosa Bonheur painted like a man, but she dressed like a man also. Another prominent woman artist who did manly work smoked strong cigars. Women are good copyists, but the creative art is less developed in them. The suggestibility of the woman can easily induce criminal actions. Hypnotism is more easily secured in women than in men. In chlorosis, which is shown to be a depressed state of thyroid action, we find alterations of mentality.

In man the testicle plays as powerful a rôle as in woman the ovaries. This is shown in the altered mentality of the eunuchs. No eunuch was ever a great, forceful man. They are timid, cruel, petty and avaricious. A normal man may be generous, bold, grateful, never so a eunuch. In old age we see senility, avarice. In degeneration of the testicles, there follows suspicion,

avarice. On account of old age there are certain alterations of the mind which, by exaggeration, might lead to crime. In very old age we find great religiosity most developed in women. Religiosity can lead to superstition, and superstition to crime. Christian science is a dangerous belief, which may lead to manslaughter in not calling the aid of a physician in grave illness because of its blind, stupid faith. Therefore Christian science should be repressed in the interest of the public.

Most courts in Europe accept responsibility before the law only after puberty is established. The way of thinking of the child is diffusive, fanciful, different from that of the adult. The conception of right and wrong in children is not the same as in a person of sixteen or eighteen, because the testicles are not developed or descended. Dementia precox, a relative condition, is one in which crime can be easily committed. Imitation, by opportunities to see or hear of crime, frequently, by suggestion, induces evil acts.

Experiments show relation in acts by imitation between monkeys, apes, and man.

Children and persons of weak, impressionable character are liable to do wrong because they do not possess clear, definite notions of right and wrong. They are attracted by graphic demonstrations.

Excellent barriers against crime consist in not allowing children to see cinematographic shows of questionable or evil acts. Children born of parents who are hysterical or neurasthenic, when they see criminal acts, are more apt to commit them. Hence the necessity of forbidding cinematographic shows of a questionable character. Of 173 persons in France who had been beheaded, there were only two who had not seen an execution.

The importance of a clear understanding of the interrelationships between the ductless glands and insanity and crime are of the first importance in this connection. When the thyroid glands of parents are altered, those of children are often altered, too. In alcoholism there is degeneration of the thyroid gland, also in syphilis and infectious disease. Children of persons addicted to alcoholism or with tuberculosis, also whose thyroid is degenerating, are often born with congenital atrophy of the thyroid gland.

Another great fact is that crime is most common among children of alcoholic and syphilitic persons, because these children are born in a condition of congenital myxœdema and are deficient in reason and will-power. It is best to take children of criminals away from the home and put them into schools to be educated at the expense of the government. It will cost far more money to allow the children to grow up criminals and be put in jail.

The best way to prevent crime is to give education to the children; at the same time there is the necessity of religion and of training in reason.

Religion is, and must be, the basis of every government and every state. Without religion a country cannot stand; a criminal court is not a sufficient safeguard. Education is a great necessity, because the educated man will get more reason, and education will lead him to obedience. Obedience will teach him to control his will-power. Criminality is greater in the United States than anywhere abroad, because citizens are not disciplined here by a regular service in the army. The young man is not taught to subject his own will to the will of others.

Here sons of the wealthy class are permitted too much loafing; they indulge in sexual excess, hence suffer from alterations of mentality. Observe the case tried recently in New York, in which an idle life was a prominent factor. This young man was born into a family in which insanity was pronounced, and thus equipped with a tendency to crime. An idle life and lack of self-control were the impelling forces.

As to the mental condition of so-called "dementia Americana," I do not admit such an entity. I would term it rather "dementia plutocratica." This, however, is not essentially American. It may be more common in America, but if it is more frequent, it is because America is richer.

I cheerfully testify to another quality of which we find examples in this country, exemplified in the career of a poor boy, inheriting mental capacity and acquiring American pluck. Such qualities we see in Abraham Lincoln. Though a poor boy, he became a great man, and finally the President of this country. In a man like Benjamin Franklin also we have a typical American.

In the prevention of crime, let me mention that systematic training in obedience is one of the main agencies.

Another point is the necessity of making only such laws as can be respected and which are in accord with the promptings of human nature. Legislation is too often made by persons who do not know much of human nature. For instance, forbidding the drinking of a glass of beer on Sunday or to buy a cigarette, as in Indiana, may be called a crank law. Such laws will undoubtedly be broken. This is a dangerous precedent, for if one is broken so will another and more important be. In order that a law shall be kept, the statute should be in conformity with human nature, and not against it.

Nerve specialists should be held in the service of the government to act as experts in alienism. I would advocate the necessity of having several of these experts, so that there would be different opinions heard in the courts and offices of the law. In difficult cases there should be a third man to decide. We must remember that the ductless glands influence most powerfully all our

vital processes. The experts should be compelled to acquire a thorough understanding of their physiology and derangements.

In regard to the treatment of criminals, we would ask whether punishment is the real treatment of disease. What are the purposes of punishment? The first purpose is the protection of society. Vengeance should never be admitted. I would advocate putting criminals in a colony where they could be taught to raise cattle, chickens, flowers and vegetables; this would be better than to imprison them. There is then no taint upon them, and they can be made useful members of society.

Woman is the guardian angel of man, and when fulfilling her vocation she is a most powerful feature in the prevention of crime in her influence upon her husband. It is desirable that all men be married; otherwise they are not normal in their impulses.

I feel particularly happy that it was given to me to speak on this subject in Philadelphia, in the City of Brotherly Love. I want to impress upon you the necessity of treating criminals with brotherly love, and as physicians to treat them as patients.

I do not claim to be an alienist, nor even a specialist in psychiatry; still, I thought it desirable to enter upon the study of this subject because it was in logical connection with the study of the ductless glands, which I regard as of the highest importance.

It is very difficult to establish a classification of paranoia and dementia precox, they so gradually merge into one another. Medicine is an exact science, and there is no science where logic is so necessary as in medicine. A study of the ductless glands shows logically that it is possible to put the study of crime upon a scientific basis.

The treatment of alcoholism is the treatment of crime. The normal man does not take alcohol. To be logical in the prevention of crime we must prevent that condition which makes the subjects crave for stimulants. Alcoholism could be treated by aiding in all ways to normal metabolism. In all conditions where the thyroid gland is degenerated alcohol is taken in enormous amounts. It is a strange thing that women in pneumonia and other infectious diseases take an enormous quantity without exhibiting the characteristic effects. In pneumonia there is hyperactivity of the thyroid gland, and then exhaustion. These are physiological facts which should be studied.

Dr. Lorand closed his lecture with the conclusion that it was possible to put the study of crime on an exact scientific basis; but only with adequate knowledge of the functions of the ductless glands.

J. MADISON TAYLOR.

Cyclopædia of Current Literature

APPENDICITIS; EMPYEMA AND ABSCESS OF THE LUNG AS SEQUELS OF ACUTE SUPPURATIVE.

Abscess of the lung and pleural empyema are not infrequent sequels of appendicitis, being present in not less than 2 per cent. or 3 per cent. of all suppurative cases. The source of infection may occasionally be overlooked. They may occur, although rarely, as true metastatic processes, more commonly as a result of a collection of pus in the subphrenic space in the course of a general purulent peritonitis; but by far most frequently of all, as the result of a direct extension of an abscess along the outer side of the ascending colon to the right subphrenic space, and thence to the pleura and the lung.

These complications are by no means necessarily fatal; on the contrary, in those cases where the pus finds an outlet through a bronchus, and is discharged from the mouth, a favorable result may be expected. Much may be done to prevent such an accident by more efficient drainage of these abscesses which lie on the outer side of the cæcum, above the brim of the pelvis, and which, by their position, would naturally gravitate toward the loin. Homer Gage (Boston Medical and Surgical Journal, April 11. 1907).

BLOOD-PRESSURE IN ARTERIOSCLEROSIS AND BRIGHT'S DISEASE.

Before proceeding with the exhibition of vascular drugs, the heart and circulation should be examined with the utmost care. The points of importance to be noted are the character of the heart-tones, the relative degrees of hypertrophy and dilatation, the existence of galloping-rhythm, the pulse-rate in both the upright and recumbent positions, and after-activity. Both the systolic and diastolic blood-pressures should be carefully estimated in the recumbent and the upright positions, and the degree of postural variation carefully noted, in order to determine a want of vigor in the ventricle. A rapid, irregular, or intermittent pulse, the presence of gallop-rhythm, a mitral systolic bruit, inverse pulse and pressure-record, all point to cardiac inadequacy in face of the high blood-pressure, and may serve as indications for cardiac stimulation in place of, or in conjunction with, vasodilation. Because the blood-pressure is high, it does not necessarily follow that vascular relaxants are indicated; it may be that cardiac tonics are more urgently needed.

Excessive blood-pressure of itself does not constitute an absolute indication for drug treatment, nor does it serve as reliable ground for a bad prognosis. It is remarkable how well Nature accustoms herself to serve circulatory resistance, so that cardiac integrity is maintained and symptoms remain absent for long periods, with pressure of 200 mm., and even much higher. The writer has observed patients whose blood-pressure, covering a period of two and three years, has seldom been below 200 mm., yet they have enjoyed a good measure of activity and freedom from symptoms. One individual, whose blood-pressure has ranged from 200 mm. to 265 mm. for one year, has remained practically free from symp-

toms. It is well to accent the point that because the blood-pressure is high it does not necessarily follow that it must be reduced by drugs in order to insure either the patient's safety or comfort.

Active vasodilators (nitrites) may be occasionally necessary to meet emergencies, such as stenocardia, angina pectoris, apoplexy prodromes, etc.; under such circumstances they are perfectly justifiable and they may be given with a freedom not at other times permissible.

Blood-pressure may be reduced temporarily by vasodilator drugs, but it is very difficult to produce a permanent lowering except in the presence of a weak heart. This is easily understood when it is remembered that vascular pressure is a compound of ventricular propulsion and peripheral resistance. If the latter is modified in the presence of a strongly acting ventricle, the pressure will be maintained by the heart. If the peripheral resistance is modified in the presence of a weak ventricle, the blood-pressure will fall with a simultaneous increase in the pulse-rate, due to inadequate efforts on the part of the heart to maintain pressure. It follows, therefore, that a material fall in blood-pressure which is more than temporary, due directly to vasodilators, especially if accompanied by quickened pulse-rhythm and not marked by improvement in the patient's sense of well-being, is apt to be unfavorable, being ominous of a weak heart.

A sustained high blood-pressure (over 200 mm.), if accompanied by symptoms of disquieting character, may render a course of vasodilator medication advisable. The drug chosen should be slowly and cautiously introduced, closely watching its efforts on blood-pressure, pulse-rate, and subjective state of the patient. The sudden employment of full doses of an acute vasodilator is to be condemned, as it may produce serious consequences to the patient's heart and nervous system. A fall of 10 to 15 per cent. is, as a rule, all that is necessary or judicious to accomplish by drugs.

The benefit derived from vasodilator medication can not be properly gauged by the blood-pressure record. The patient's subjective comfort, and more especially the pulse-rate, forms a better index of the effect produced. The most favorable influence, in the writer's experience, has been in cases where no manifest fall in blood-pressure has resulted, but subjective disturbances have disappeared, and the pulse has diminished in frequency. As the result of personal observation, the writer states that the case which, above all others, will be best influenced by vasodilators is one in which the blood-pressure is high (over 200 mm.), and in which no direct response to the drug in the pressure record is apparent, but merely the indirect response in pulse-rate and bodily comfort.

The employment of vasodilators in the late stages of Bright's disease with cardiac dilatation, dropsy, etc., is practically useless, and were it not for the fact that the vasomotor control of the peripheral circulation is too much disturbed to respond, they might do harm. The fact that the case was primarily one of high tension forms no excuse for continued reliance on these drugs under such circumstances. A. R. Elliott (Journal American Medical Association, April 13, 1907).

BURSITUS, SUBDELTOID.

That traumatism in one form or another is the usual cause of subdeltoid bursitus is shown by the four cases

reported by the author. He says that the most common injury producing this condition is a fall on the shoulder or a violent twist or wrench of this articulation. The writer believes that the treatment of all these cases should consist in open incision and removal of the entire sac, irrespective of the duration of the case or the cause of the condition. The after-treatment, which is begun within a week or ten days, consists of passive motion and hot fomentations to the shoulder. The prognosis is found to be better after the open method of treatment than after simple manipulation. Convalescence is also much shortened and the functional results are considerably better. C. F. Painter (Boston Medical and Surgical Journal, March 21, 1907).

CANCER, CAUSE AND CURE OF.

A new theory of the cause of cancer is advanced by the writer, in which he takes account both of Cohnheim's theory and parasitism. He says that at that degenerative period of life which is so closely related to the occurrence of cancer, when cessation of the sexual functions and atrophy of the sexual organs supervene, there may be a quota of that dynamic element which he calls physiological energy, which finds itself at a loss for lawful occupation in the economy. What more natural than that, being at liberty, so to speak, it should expend its force in ways biological but mischievous? As Nature abhors a vacuum, so she abhors unused energies. And so cancer is produced. For the etiology of a benign growth he accepts Cohnheim's theory, the type of growth being determined by what type of embryonic cell is operative, plus perhaps trauma, including a *locus minoris resistentiæ*. Here we may conceive, says the author, theoretically, of parasites furnishing the source of irritation no less than in the case of malignant growths—an incidental factor in both instances. We may also conceive of a misplaced embryonic cell as constituting *per se* a competent source of irritation, without introducing assumptions of additional factors in traumatism, due to cytology of some sort not necessarily related to traumatism in the conventional sense.

For the etiology of malignant growths we must postulate a further factor, perverted energy. We must also postulate a selective affinity of this perverted energy for epithelial tissues, they constituting the media for the appearance of cancer in tangible form, for the reason that they are most exposed to cytolytic damage and most wanting in resistance because of their high state of differentiation. Experience has taught that radical extirpation is not usually enough. Something is lacking. Mere extirpation of the growth does not extirpate the fundamental factor. The operation exercises a salutary effect temporarily, but the cancer recurs in or near the scar when the process of repair is complete, or shortly subsequent thereto. The force concerned must in some way be harnessed until such time as it shall cease to operate. A. C. Jacobson (Medical Record, April 6, 1907).

CANCER, TREATMENT OF.

The author brings under consideration the recently proposed treatment of cancer by trypsin, and adds views of his own on this subject. Dr. Beard, who first advocated the trypsin treatment, inferred from some experiments that cancer was in some way related to a deficient production of trypsin. Since this body is a derivative of one of the

most important constituents of the pancreatic juice, we must admit, if cancer is related to a deficient amount of trypsin, that a disabled condition of the pancreas is the direct cause. But for the primary cause of the disease, we may go further. The tumor is to be considered as merely a symptom, a local manifestation. Failure to discern this fact in the treatment of the disease has been a stumbling block to previous methods. Local measures of relief must be accompanied by measures designed to restore to their normal functional activity, organs, such as the pancreas, which exert an important influence upon healthy cell-life. In support of this statement, it is sufficient to recall how surgical procedures, as well as various local treatments of cancer, have both failed so far to give reliable and permanent relief.

The treatment by means of trypsin, according to the author, has not been in existence long enough for us to place it beyond the experimental stage. It will probably become a valuable adjunct to dietetic and constitutional measures, but it is not to be expected that its sole influence will give any permanent effect. He believes that cancer is not due to any one cause, but to a chain of causes and effects, each of these requiring separate attention. He holds that an undue degree of fermentation of undigested food-stuffs in the intestines and an autotoxæmia resulting from this are related to the inefficiency of the pancreas in the production of trypsin. The effect trypsin is said to have on cancerous areas supports the view that a malignant cell is intrinsically weaker than a normal cell. The trypsin will doubtless be of service in attacking the weaker cells of the cancer; it may destroy them, and thus render the tumor innocuous by preventing its further spread. If we can by any means invigorate the cells surrounding a malignant growth, we should be able to subdue it. It cannot be assumed that trypsin has any direct action on cell-metabolism; whereas there is conclusive evidence that the thyroid gland not only possesses the power of preventing injurious effects from autotoxæmia, but also that it exerts a potent influence towards healthy cell-metabolism.

That the thyroid is related to the incidence of cancer is borne out by the fact that in cancerous subjects it is invariably found to be more or less atrophied. Hence it would seem to be of the first importance in the treatment to aim at restoring the functional activity of this organ; this is to be done, according to the author, by adapting the dietary of the subject to the capabilities of his digestive organs, in order to reduce noxious fermentation in the intestine to a minimum. In addition to this, thyroid gland substance or its active principle is to be administered. It is reasonable to hope that the gland may thus be brought to resume the normal degree of its activity.

Other organs beside the thyroid are affected in the cancerous condition. The salivary glands become more active; the quantity of hydrochloric acid in the stomach is much reduced, and probably also the pancreatic secretion is to some extent in abeyance. Imperfect digestion, resulting from the above, may well account for the serious loss of body-weight. Likewise it is admissible that the absorption of toxic bodies from the intestine should give rise to that condition which is termed the cancerous cachexia.

The article closes with an admoni-

tion to the surgeon. He ought to be aware of the fact that long before the local appearance of the disease there are latent conditions elsewhere in the system, which subsequently permit the local manifestation, although this is in most cases brought forth by a direct injury or prolonged irritation, weakening the tissue of the part. It is to be expected that the surgeon's knife will have a disastrous effect upon the vitality of the tissues and invite a recurrence of the growth, when measures are not taken to remove the primary cause of the condition. Robert Bell (Medical Record, February 16, 1907).

CHOLERA, BACTERIOLOGICAL DIAGNOSIS OF.

A certain number of vibrios, although agglutinating to some extent with cholera serum, are sharply differentiated morphologically from the cholera vibrio, by the fact that they are multiciliated. Whereas some vibrios found in ship-water are aggultinated by very dilute solutions of cholera serum, others are agglutinated by far stronger solutions only. The latter form a transition stage, so to speak, between the non-aggluinating and the highly agglutinating vibrios. Although an active cholera serum agglutinates all the vibrios to some extent, yet only two of these vibrios, when injected into animals, produce serums having a powerful agglutinating effect on cholera vibrios; two serums had the same property, but to a slighter extent, and two had none.

The writer states that the present experiments support the conclusion previously arrived at, namely, that it is not advisable to trust to the agglutination test only in the bacteriological diagnosis of cholera. The test is useful, but not specific. M. A. Ruffer (British Medical Journal, March 30, 1907).

DELIRIUM TREMENS, TREATMENT OF.

The author witnessed the collapse and death of a robust man in delirium tremens while being given a prolonged warm bath. One of his patients succumbed in collapse during a wet pack, and he has consequently abandoned these measures. In treatment of 1051 cases of delirium tremens in the last sixteen years, he has made it a rule to allow no alcohol. In the first series of 486 cases the mortality was 6.37 per cent., while in the last 565 cases it has been only 0.88 per cent. He ascribes this improvement in the results to his observation of the fact that the cause of death in delirium tremens is generally paralysis of the heart, and he now addresses treatment to the heart, regardless of whether cardiac symptoms are apparent or not. The agitation and motor excitement react on the heart, and signs of heart-weakness soon become manifest. He makes it a rule to give digitalis from the very first, giving 1.5 gram in an infusion in the course of the day, and repeating this dose two or three times. If it can not be given by the mouth, he gives it in a rectal injection. At the first signs of heart-weakness, other heart-tonics are used; 1 gram of camphorated oil is injected subcutaneously every hour or so until the critical symptoms subside. A tablespoonful of ice-cold champagne every half-hour was also found useful—the only way in which he allows alcohol. To promote the washing out of the toxins causing the attack, he has the patients drink copiously, and supplies them for the purpose with a drink which has the color of beer and tastes refreshing, and is taken eagerly by the deliri-

ous patient. It is merely a 1 per cent. solution of sodium acetate in water, to which a little common syrup has been added. S. Ganser (Münchener medizinische Wochenschrift, Bd. liv, Nu. 3; Journal of the American Medical Association, March 2, 1907).

EMBOLISM.

The author remarks that the circulatory system, like any other system of pipes and tubes, may get out of order, plugging or embolism being one of the possibilities. Embolism is favored by the variation in diameter of the vessels. It implies a preëxisting morbid condition, which produces in the bloodstream a substance which cannot circulate. The position in the circulation where embolism occurs depends upon the size of the embolus. The circulation, with respect to embolism, may be divided into three parts, separated by impassable capillaries. One part extends from systemic venules to pulmonary arterioles, another from pulmonary venules to systemic arterioles, and a third from gastro-intestinal venules to interlobular portal venules.

Two types of embolism are considered, multiple embolic aneurisms and pulmonary embolisms. The former originate from valvular vegetations of the left heart associated with rheumatic or infective endocarditis, and are rapidly fatal if they attack the intracranial vessels. The latter usually begin as thrombi in the systemic veins, death occurring suddenly, with perhaps no precedent evidence of any serious condition. A. Hall (Practitioner, March, 1907).

GOUT, TREATMENT OF.

The author deals with the treatment of gout in some of its more frequently occurring forms. For relieving the local pain he recommends the following:—

℞ Sodii carbonatis, ʒiij.
Linimenti belladonnæ,
Tincturæ opii, of each, ʒij.
Aquæ, ad ʒviij.

A small portion of the lotion should be mixed with an equal quantity of hot water, and then poured on cotton-wool previously arranged around the joint. The pack should be changed every four hours. In connection with the acute paroxysm, no attempt at local depletion, such as the application of leeches to the inflamed joint, blistering or incisions, should on any account be made, owing to the great liability of thereby extending the inflammatory condition, and so producing subsequent ankylosis or deformity.

For the internal treatment a pill containing the following ingredients is given three or four times a day, immediately after eating:—

℞ Colchicinæ, gr. $^1/_{60}$.
Ext. nucis vomicæ, gr. $^1/_4$.
Ext. hyoscyami, gr. $^1/_2$.
Ext. gentianæ, gr. j.

(The United States Pharmacopœia gives the dose of colchicina as $^1/_{128}$ grain.)

In addition to colchicum in small doses, the writer recommends from 5 to 10 grains of guaiacum in cachets two or three times a day, in the treatment of subacute and chronic gout. For the local treatment of gouty joints the author advises elevation of the limb, application of a light flannel bandage, and the use of hot and cold douches alternately, the Scotch douche and massage. For the removal of œdema he employs galvanism and massage.

In gouty hepatic inadequacy he has found the following mixture, taken 15 minutes before meals, most beneficial:—

℞ Sodii bicarbonatis, gr. xij.
Tinct. nucis vomicæ, *m*x.
Tinct. gentian comp., 3ss.
Spiritus chloroformi, *m*xij.
Aquæ menthæ, pip., ad ℥j.

A. P. Luff (Practitioner, February, 1907; Journal of the American Medical Association, March 9, 1907).

HÆMOPTYSIS: TREATMENT.

The author advises the patient to be put to bed in a cool, airy room, in a propped-up position, giving him an injection of morphine, letting him have some turpentine to inhale, and reassuring him of a favorable outcome. The patient should be put on a calcium chloride mixture, have his bowels kept well open by a saline purgative, have a cool and partly dry diet, and ice to suck to relieve thirst. If the hæmoptysis is persistent or recurrent, the author would use nitroglycerine. P. S. Hickens (Practitioner, March, 1907).

HAY-FEVER, OBSERVATIONS ON.

The necessity for making an accurate diagnosis in cases suspected to be true hay-fever is dwelt upon by the writer, in order to distinguish them from nervous coryza, nervous asthma, etc. In order to do this it may sometimes be advisable to resort to the use of a diagnostic pollen extract. This can be prepared by triturating in a mortar pollens of the different varieties encountered in the locality in question, adding salt solution or plain water, centrifuging, and using the clear fluid. The author speaks highly of the use of nose-filters and protective eyeglasses with padded rims as prophylactic measures, but does not consider that Dunbar's serum is a true antitoxin. In order to prove a point denied by many, namely, that the conjunctiva alone may in some cases be susceptible to the irritating properties of the pollen, the writer describes his own case. Ever since being exposed to the pollen of rye, while collecting this in the fields for experimental purposes, he has suffered from a very marked idiosyncrasy to the influence of pollen, but this has always manifested itself only through conjunctival symptoms, and there has never been any involvement of the nasal mucosa. Wolff-Eisner (Deutsche medizinische Wochenschrift, February 14, 1907; Medical Record, March 16, 1907).

HERPES SIMPLEX.

Herpes zoster and herpes simplex—both the facial and genital varieties—while not clinically identical, are closely related. The histology of the cutaneous lesions and the observed changes in the nerve structures examined appear in all to be practically the same. It is highly probable that the vast majority of all cases of herpes of the various types are the result of the action of a toxin. This proposition necessarily assumes the infectious origin of herpes.

The frequency of herpes simplex in certain infectious diseases and its rarity in others is evidence that the toxin must possess certain peculiar qualities in order to exercise a selective affinity for sensory nerve structures. The toxins producing herpes simplex and herpes zoster are in all probability not the result of the action of any specific microörganism. This is certainly true of the former and by analogy may be assumed to be true of the latter disease.

The three diseases in which an "herpetogenic" toxin develops with a fair degree of constancy are pneumonia, spotted fever and malaria. Its frequency in

these diseases and its comparative rarity in typhoid fever and many other infectious maladies make its appearance a symptom of considerable diagnostic import. In view of the tendency of certain individuals to recurrent attacks of facial herpes from slight indispositions, the fact as to such a history should always be elicited before according to herpetic outbreaks the diagnostic value referred to. Jay F. Schamberg (Journal of the American Medical Association, March 2, 1907).

INEBRIETY, TREATMENT OF.

The writer maintains that the cure of the inebriate depends on some as yet unknown constitutional change, and the treatment, therefore, should aim to remove the exciting causes and to restore the nutrition and integrity of the organism, and thus to favor the bringing about of this change. A great many reported cures by drugs or mental or moral influences are simply the result of this constitutional change, and in no way due to the agencies credited. If the case is an office one, strict instructions should be given regarding the use of medicines and conduct and surroundings. If a periodic case, the premonitory symptoms must be watched for and apomorphine given, with special care as to time and place. If nutrition is greatly disturbed, phosphate of sodium, combined with daily baths, is particularly useful.

Conditions of systemic poisoning, lowered resistance, defective circulation, etc., are always present; hence purely moral treatment can have little effect. Each case is a study by itself, but the combination of proper psychic treatment with measures to secure brain-rest should be aimed at, to favor elimination of poisons and to restore the lost balance of the organism. The radiant light bath is a valuable eliminative measure and restorer of the peripheral circulation. In many cases atropine with strychnine or lupulin is of service in relieving excitement, while the bitter tonics, especially large doses of infusion of quassia, are often of great value in overcoming derangement of nerve-centers and in preventing paroxysmal explosions.

The patient must be kept under medical oversight for a very long period, as the drink-impulse may recur. There is little danger of the physician giving a too extravagantly hopeless prognosis of the danger in persons who are practically inebriates, nor is a pessimistic view of their incurability warranted. Clinical experience and rational study of inebriety indicate its curability, and the permanency of the cure is proportioned to the accuracy of the study and the application of exact means. The great trouble at present is that the rational therapeutics of the condition is still in its infancy; moral treatment and quack treatment predominate everything, and the rationalist who would study and apply exact measures is not looked on with favor. T. D. Crothers (Journal of the American Medical Association, February 16, 1907).

MIGRAINE AND HEMIANOPSIA.

As the result of careful study of several cases, the writer concludes that attacks of migraine may result in an area of softening in the brain, which shows itself by a permanent paralysis, aphasia, or hemianopsia, and that in most instances this is due to the attack favoring a vascular lesion in persons who have already disease of the walls of the blood-

vessels, but that in certain cases the vascular lesion may occur in young persons whose blood-vessels are, in all probability, in a normal condition. In all cases of organic disease of the brain, coming on during an attack of migraine, extreme caution is necessary before ascribing even an exciting rôle to the migraine, as it is much more common to find independent organic disease of the blood-vessels which would account for the organic disturbance in persons who have suffered from migraine; yet a few cases remain which can hardly be explained in this way, and justify the statement made by Charcot and others that the transient hemianopsia or aphasia seen occasionally in this disease may become permanent. J. J. Thomas (Journal of Nervous and Mental Diseases, February, 1907).

PNEUMONIA, ABORTIVE TREATMENT OF.

According to the writer there are two circumstances which account, in a great measure, for the high percentage of mortality which attends the treatment of pneumonia by prevailing methods. The first is the frequent failure to recognize the fact that, in the form in which it usually presents itself, pneumonia is, as von Jürgensen has stated, a general as well as a local disease, and therefore remedies addressed to the lungs alone, no matter how appropriate and reliable they may be, must often fail to effect a cure. The second is the lack, which has heretofore existed, of a safe and reliable remedy for the removal of congestion. Congestion implies not only stagnation, but chemical deterioration of all of the fluids in the affected area, of the interstitial fluids as well as of those within the capillary vessels. The successful remedy, therefore, must be one which is liable, speedily, to remove both of these morbid conditions. Until recently drugs have been almost the only means available for this purpose, but now more efficient measures are at command. The chief of these, according to the writer's experience, is the ozone-producing electric current. And this is the treatment by the author. It should be applied from half an hour to two hours at a time, and repeated several times daily, according to the severity of the case, but never so frequently as to interfere with a proper amount of sleep. It should be applied over the head, spine, and abdomen, as well as over the congested area; over the cerebrum and medulla, because it clears the mental faculties and stimulates the nerve-centers which control both respiration and motion; over the abdomen, because it augments the activity of the eliminative organs; and over the congested lung-area, which can be accurately outlined by the painful sensation caused by passing the electrode over it, because it oxidizes and renews the inflammatory deposits.

A very important adjunct of ozonation, and in some measure a substitute for it, is oxygen, especially in the first stage of pneumonia. The advantages of this treatment with ozonation are, in addition to the greatly lessened mortality, which is its best recommendation, the speedy recovery it insures, the rapid and thorough elimination of the disease, owing to the invigorating methods employed, as not only are many complications and sequelæ avoided, but chronic minor affections from which the patient may have suffered often permanently disappear. G. L. Curtis (Medical Record, March 16, 1907).

PORTAL CIRRHOSIS OF THE LIVER.

Portal cirrhosis or fibrosis of the liver, according to the author, is the result of alcoholic excess. Alcohol only

acts indirectly on the liver by setting up gastroenteritis, which gives rise to specific poisons, which, on reaching the liver, produce the change in the cells and connective tissue. Portal cirrhosis is most frequently met with in middle life, few patients being over fifty years of age. It is a chronic interstitial hepatitis, a monolobular cirrhosis. In the earlier irritative stage, there are dyspepsia, morning vomiting, enlargement of the liver, diarrhœa, and loss of strength. Copious hæmatemesis may occur, leaving profound anæmia, and melæna may occur for a day or two. Subsequent hæmorrhages may prove fatal.

The second stage is established when abdominal dropsy begins. The hepatic condition is but part of a widely spread change in all the tissues of the body. The small capillary enlargements on the skin of the arms, neck, and trunk, the "stigmata" or spider-like angeiomata, are practically peculiar to portal monolobular cirrhosis, especially the alcoholic variety. A general hæmorrhagic condition may be present. Jaundice is not present to any extent. When the liver is contracting and ascites is progressing, the fluid must be removed by tapping, and the earlier this is done the better. Talma's operation to prevent further accumulation of fluid consists in setting up adhesive inflammation between the peritoneal surfaces of the liver and the diaphragm by scraping these surfaces. Another operation is epiplopexy, in which the greater omentum is stitched to the anterior abdominal wall. Either of these operations should be carried out in the early stage of ascites, and then only if the patient is in good condition. The results so far have not been very encouraging. The best remedies are compound jalap powder, and mercury, squill, and digitalis pill. Sir D. Duckworth (Lancet, February 9, 1907).

POSTPARTUM HÆMORRHAGE.

Postpartum hæmorrhage is defined by the author as a hæmorrhage which is the result of an atonic state of the uterine muscle, acquired, accidental, or constitutional. The one thing which should be immediately done, the one rational treatment in all cases is to shut off the blood-current along the uterine arteries by compressing the abdominal aorta. The uterus is atonic. Its gaping vessels are, or were, so long as any blood tension remained, pouring out blood. There is marked collapse. The nerve-centers which control uterine contractions, and the higher centers which control cardiac action and respiration, are devitalized. The first indication is to prevent further hæmorrhage. The second is to revitalize the nerve-centers, which can only be done by increasing the volume and current of the blood. The third indication is, having restored blood-tension and nervous energy, to assist, now possible, uterine contraction.

The author's treatment consists of the following steps *seriatim:* The pelvis is raised, to cause the blood to gravitate toward the heart and brain and to prevent bleeding from the ovarian and uterine veins. The abdominal aorta is compressed, to immediately arrest arterial hæmorrhage. Compression is best made against the spinal column beneath and below the umbilicus, with the outer ulnar portion of the left clenched hand. The pressure should at short intervals be made to slide from one part to another of the available three or four inches, to avoid injury to the network of sympathetic nerves around the vessel, and it should be continued until

uterine contraction is secured, even if this be delayed for one or two hours. Its release must be very gradual. The arms and legs are raised to transmit their blood into the trunk, and then firmly bandaged to prevent the return of blood when they are lowered. By these means the blood-tension is raised almost to normal in one or two minutes. The aseptic hand is then carefully passed into the uterus to detect any possible laceration of the body or cervix, any retained portion of placenta, and to afford a *point d'appui* for grasping and compressing the uterus from outside. The bandage must be kept on the limbs a long time and the blood allowed to return into them very slowly. The writer has used this method of treatment in about 5000 parturitions, and has never seen a death from postpartum hæmorrhage. J. F. LePage (British Medical Journal, January 26, 1907).

POSTURAL ALBUMINURIA.

It has long been disputed whether the albuminuria which vanishes when the patient reclines is physiologic or functional, or the result of actual disease of the kidney. The writer brings an important contribution to the subject with the postmortem findings in the case of a child in whom this orthostatic albuminuria had been observed during life and who succumbed to an intercurrent brain tumor. He states that the kidneys were sound macroscopically, with the exception of congestion in the organs, without extravasation or hæmorrhage. There was also an extremely slight tendency to fat-infiltration at a few points, and a minute focus of degeneration, 1 by 5 millimeters, on the surface. He attributes these slight changes to the long death-agony in the case. They were too trivial to be considered, he thinks, in connection with the orthostatic albuminuria, which had been observed for a year and a half. A small tuberculous lesion was found at one apex, which confirms the view held by some observers, that the postural albuminuria is a "pretuberculous phenomenon." O. Heubner (Berliner klinische Wochenschrift, Bd. xliv, Nu. 1; Journal of the American Medical Association, March 9, 1907).

PULMONARY TUBERCULOSIS, PRETUBERCULAR STAGE OF.

Attention is called by the writer to the earliest symptoms of pulmonary tuberculosis, before the physical and rational symptoms have become fully manifest. After noticing the usually recognized characteristics of the phthisical predisposition, the author mentions, as the signs of incipient consumption, an over-brightness of the eyes, with possible slight inequality of the pupils due to reflex of the ciliary nerve from apical irritation, brittleness of the hair, variable and uncertain appetite, fluctuations in body weight, quick fatigue, subnormal morning temperatures slowly reached by the thermometer, chest pains, frequent clearing of the throat, and husky, expiratory cough; there may be a bluish tinge to the lips or an unusual redness of the gum-margins. Careful inspection may reveal deficient expansion of one or the other apex, or the Litten shadow may not fall as it should. A prolonged expiratory sound may be heard at or near an apex, and there is sometimes also a fine laryngeal crepitus to be heard by placing the ear near the open mouth of the patient. Sooner or later a slight hæmorrhage or a prolonged "cold" will startle the patient and be what he, and too often his physician, considers the starting

point of pulmonary tuberculosis. C. F. Beeson (Journal of the American Medical Association, March 16, 1907).

SHREDS IN THE URINE.

The scanty references to shreds in most textbooks has led the author to make a detailed study of these elements in a large number of cases of chronic urethritis, prostatitis, and vesiculitis. He states that shreds are best studied after proper fixation in stained specimens according to the methods outlined by him, Unna's polychrome stain being the preferred reagent for routine work and Gram's stain when gonococci are to be demonstrated. Urethral shreds proper may be divided into four varieties: pus shreds, mucopus shreds, mucous shreds, and epithelial shreds, each of which has special naked eye and microscopic characteristics.

Several varieties of altered epithelia are found in urethral shreds. Those undergoing hyaline changes may be identified not only by the idiophile reaction, but by a peculiar degeneration as shown by their staining qualities with polychrome methylene blue. Shreds composed of pure epithelia, consisting of flat pavement-cells with small nuclei, shed spontaneously, or after instrumentation, in the stage of the disease in which the superficial layers of the urethra become lined with squamous cells under the influence of subjacent, submucous lesions.

Shreds from the prostate and vesicles include several special varieties which can be recognized under the microscope, but cannot be identified with the naked eye. The so-called comma shreds in reality may be one of two varieties of structures. The true comma shred of Fürbringer consists of hooklets of stratified epithelia, derived from the prostate duct. A false variety of comma shreds is composed of bits of mucous shreds which roll up into a lump at one end. The frequency of gonococci in urethral shreds is directly as the proportion of pus-cells, and inversely as the proportion of mucus and epithelia in the specimen. This rule does not apply to prostatovesicular shreds.

The study of shreds is not of great value in the localization of the affection in the anterior or the posterior urethra. The presence of prostatic or vesicular shreds which can be recognized microscopically is an aid to the localization of the process. The writer considers the study of urethral shreds as most valuable in determining the stage of the process, the order of appearance being, with certain reservations, as follows: pus shreds, mucopus shreds, mucous shreds, and epithelial shreds.

In the prognosis the variety of urethral shreds present can have but a limited use. The fewer the shreds and the fewer the pus-cells therein, the better the prognosis. The larger the number of gonococci and of pus-cells, the worse the prognosis is, as a rule. Marriage should not be sanctioned unless the terminal shred or shreds contain no pus-cells for months, even after provocative measures, such as the drinking of beer. DeSantos Saxe (New York Medical Journal, March 2, 1907).

TETANUS, QUININE IN.

Solutions of the official salts of quinine have a feebly antiseptic action on the spores of tetanus, the hydrochlorate being the most antiseptic. Obviously the antiseptic action depends on the concentration of the solution. Saturated solutions do not disinfect. The lethal dose of neutral hydrochlorate of quinine is from $^1/_{3500}$ to $^1/_{4000}$ the

weight of the guinea-pig and from $^1/_{4500}$ to $^1/_{5000}$ the weight of the rabbit. The dose varies with the age of the animal, young animals being more susceptible than older ones. Hydrochlorate of quinine has the power of causing a paralysis which persists for various lengths of time in the experimental animals. This action the author thinks is due to its coagulating action on the protoplasm of the peripheral nerves. Atrophy of the extremities results after large doses.

In cases of tetanus in experimental animals, which have been injected with hydrochlorate of quinine, the disease resulted only in those cases in which there was a mixed infection. The quinine may have acted indirectly, since its corrosive action at the point of inoculation would make secondary infection more liable. It is possible that the quinine may act as an additional irritant to the nervous system in cases of tetanus, or may bring about such changes in the protoplasm of the nerve-cells and fibers that they are more easily acted upon by the tetanus toxin than normally. In these particulars, however, any mild corrosive substance would serve the same purpose.

In cases in which tetanus does not result after injections and there is no secondary infection, the spores have evidently undergone phagocytosis by the leucocytes or tissue-cells, as none of them are ever found. Hydrochlorate of quinine has not the power of favoring an infection of tetanus, except in an indirect manner. It has not the power of awakening an infection when injected at the same time, or at other times than that at which the tetanus spores are injected.

Hydrochlorate of quinine produces a slight leucocytosis and slight paralyzing effect on the leucocytes. Should this paralysis be so extensive as to involve the majority of the leucocytes in the body, it is possible that the spores of tetanus might develop unhindered, as is the case when lactic acid is injected. If quinine of such strength was injected in sufficient amount, however, to act on the majority of the leucocytes, the toxic effects of the quinine would be evident at once and death of the animal would probably result.

The writer thinks, without doubt, that the majority of cases in which tetanus has resulted after hypodermic injections of quinine can be traced to some fault in the surgical technic, or to the contamination of the solution of quinine. Quinine possesses a corrosive action, and the necrosis of tissue resulting in some cases would undoubtedly favor an infection by the bacillus of tetanus as well as by other bacteria. As to the statement that the transference of the spores of tetanus takes place from point to point according to where the quinine is injected, the writer does not think that there is at present sufficient proof. Nor does he think it possible for the healthy, live spores of tetanus to be present in the body and to develop a severe and fatal infection on the advent of an injection of hydrochlorate of quinine. E. F. Campbell (Journal of the American Medical Association, March 9, 1907).

TONSILS IN ETIOLOGY OF APPENDICITIS.

Arguments are presented by the writer to sustain the assumption that an acute angina may lead to bacteriæmia and the bacteriæmia to phlegmonous appendicitis. During the last five years appendicitis was the cause of death in 53 out of 3579 autopsies at the Vienna Franz-Josef Hospital. In only 14 cases

was the autopsy complete, but in each of these there were evidences of recent tonsillitis. His experience in the clinic also favors the assumption of a connection between tonsillitis and appendicitis. The trouble is almost invariably the work of streptococci. From their primary invasion of the tonsils, with resulting bacteriæmia, may result appendicitis, osteomyelitis, endocarditis, pleurisy, meningitis, or myositis. Physicians in general fail to realize the connection between these affections, the writer remarks, but they belong in a single group not only because they are the work of a certain pyogenic microörganism, but because they are connected epidemiologically by the common link "angina." R. Kretz (Mitteilungen a. d. Grenzgebieten der Medizin und Chirurgie, Bd. xvii, Nu. 1-2; Journal American Medical Association, April 13, 1907).

TYPHOID FEVER, WIDAL REACTION IN.

The Widal test in typhoid fever has limitations. The value of the test is, in part, dependent on the technic of making it. A suitable culture must be used and the patient's blood-serum must be collected and diluted to a certain degree. There are cases of typhoid fever, so far as can be judged from the clinical symptoms, which do not show the reaction. A positive reaction is sometimes obtained in the course of diseases other than typhoid fever, or even in health.

The reaction, however, is of undoubted clinical value, since it may be obtained in nearly all cases of typhoid fever if the test is repeatedly and carefully made. It can so rarely be obtained from the serum of healthy persons or those suffering from diseases other than typhoid fever, that the occasional reactions secured from such persons do not greatly diminish the value of the test. While not pathognomonic, the Widal reaction can certainly be ranked as of equal value with any of the clinical symptoms of typhoid fever. A. T. Laird (Annals of Surgery, March, 1907).

URETHROVESICAL CALCULUS WEIGHING 845 1-2 GRAINS.

That the female urethra is susceptible of great divulsion is well known; but that the passage through it, unaided by art, of a calculus of such enormous size as that observed by the author seems incredible. The measurements were, circumference $4^1/_8$ inches, length, 3 inches, greatest diameter $1^1/_8$ inches. Its weight was $845^1/_2$ grains.

The reporter remarks that urethral calculi are much more common in middle life than in advanced age, and are very rare in females. The specimen shown was evidently a urethrovesical calculus, the length, contour, and shape demonstrating that fact. About two inches of the lower portion of the specimen occupied the distended urethra, and it formed a cast of that tube as distorted by its presence, from the bladder to the meatus urinarius, its anterior concavity and posterior convexity corresponding to that of the urethra. A little more than one-third of the upper portion occupied the bladder. The stone bore the "footprints" of an extensive ulceration of the urethra.

The reporter divided the calculus with a fine steel saw, and found that the concentric layers surrounding two nuclei suggested that a small calculus had passed into the urethra, and that the remaining spongy portion, with an irregular and hard line running through it, was a gradual formation. S. E. Earp (New York Medical Journal, February 2, 1907).

AMERICAN MEDICAL EDITORS' ASSOCIATION.

The thirty-eighth annual meeting of this Association will be held at Atlantic City, on Saturday, June 1st, and Monday, June 3d, with headquarters at the Marlborough-Blenheim Hotel. This active Association now numbers nearly 150 members, with many applications in hand for action at the coming meeting. An interesting program has been prepared, and the following are among the papers to be presented:—

President's Address, "The Future of Medical Journalism." By James Evelyn Pilcher, M.D., Ph.D., LL.D. "Shortcomings of Physiology as the Chief Obstacle to Medical Progress; the Need of Editorial Intervention in Such Questions," By C. E. de M. Sajous, M.D., Philadelphia. "How Can We Make Medical Journalism Better? (a) For Our Readers. (b) For Our Advertisers. (c) For Ourselves." By W. C. Abbott, M.D., Chicago, Ills. "A Word or Two from an ex-Journalist." By Samuel W. Kelley, M.D., Cleveland, Ohio. "The First Medical Journals." By O. F. Ball, M.D., St. Louis, Mo. "The Psychology of Medical Journals from the Reader's Standpoint." By T. D. Crothers, M.D., Hartford, Conn. "Further Reflection on the Official versus Independent Medical Journals; One Year's History." By William J. Robinson, M.D., New York City. "Journalistic Suggestions from a Semi-disinterested Standpoint." By William Porter, M.D., St. Louis, Mo. "The Situation." By C. F. Taylor, M.D., Philadelphia. "Some Aspects on Medical Journalism." By W. F. Waugh, M.D., Chicago, Ill. "The Neglect of American Mineral Springs and Climatic Resorts by Our Medical Press." By G. T. Palmer, M.D., Springfield, Ill. "A Few Feeble Remarks." By W. A. Young, M.D., Toronto, Ont. "The American Medical Editors' Association, Past, Present and Future." By Joseph MacDonald, Jr., M.D., New York City.

On account of the largely increased membership of this Association, it is anticipated that the coming meeting will exceed any prior meeting in point of attendance. The annual editors' banquet, which is always the social event of the week, will be held at the Marlborough-Blenheim Hotel on Monday evening, June 3d.

Book Reviews

THE WORLD'S ANATOMISTS. By G. W. H. Kemper. With 11 Illustrations, 9 of which are Portraits. P. Blakiston's Son & Co., Philadelphia. 1905.

This little book, of comfortable size to carry in one's hip-pocket, gives a brief account of those who have illuminated the subject of anatomy from earliest times down to the present day. It will prove of use, especially to those who are interested in anatomy, and is valuable as bringing together in a condensed form the whole subject. The biographies are about the same length as those found in such books as "Who's Who."—J. M. T.

ALCOHOL. The Sanction for Its Use. Translated from the German of J. Starke. G. P. Putnam's Sons, New York and London, 1907.

Already many of the medical journals have reviewed this interesting book of Dr. Starke's, and his contentions have elicited editorial and other comment. The views enunciated are distinctly more liberal—or rather, indulgent, one might say—to the use of alcohol than the medical profession is at present prepared to accept. It is well known that, till within a few years, this material, in its multiform guises, was regarded as distinctly beneficial for many conditions. It has been by no means proven that it is useless when employed under proper restrictions and in selected cases; but its manifest dangers, its frequent harmfulness, and the soul-destroying effects of its overuse, not only direct, but indirect by inheritance, make it a subject which constitutes a large responsibility to attempt to settle. Perhaps the whole subject of popular use by physicians might be summed up by one prominent physician, who is quoted as saying: "I use it myself moderately for my pleasure; and for patients, in certain selected cases, I hope, with judgment and good effect." It certainly is far safer to bar its use; to take the negative position unreservedly and discountenance the employment of a

substance which is capable of exerting such hideous damage, especially when we are by no means certain that it possesses any genuine utility. Dr. Starke makes an admirable plea for its proper use, and rather overstates, so far as we are prepared to believe, its beneficence, even under the most liberal of interpretation. The fact remains that many persons will continue to use alcohol, and probably with only relative harmfulness; but the consensus of opinion, as expressed in America, is the conservative and wise one of complete rejection.—J. M. T.

WHO'S WHO. 1907. An Annual Biographical Dictionary. Fifty-ninth Year of Issue. New York, Macmillan Co.; London, Adam and Charles Black.

This invaluable book, which has become a necessity in so many directions, deserves mention and continued commendation. What the editors of periodicals and the solicitors and promoters of various forms of business, good and not so good—not to mention society people—would do without this standard work, it is impossible to conceive. In short, one *must* have it. This is, of course, the original publication, confined to the inhabitants of Great Britain; but there is a similar book published now in America for the United States, by A. N. Marquis & Co., Chicago.—J. M. T.

PRACTICAL MEDICINE SERIES. Comprising Ten Volumes on the World's Progress in Medicine and Surgery. Gustavus P. Head, M.A. Vol. X. Skin and Venereal Diseases and Nervous and Mental Diseases. Edited by W. L. Baum, H. T. Patrick, and William Healy. Series 1906. Price, $10.00, or $1.25 a Volume. Year Book Publishers, Chicago.

As has been said in speaking of the other volumes of this series, these present an excellent summary, brief but comprehensive, of the medical literature of the year. Little can be said in commenting upon such books—except to advert to their completeness—other than to comment upon the former presentations. The two departments included each begin with an excellent summary of important general considerations. That of the skin begins with a chapter on "Constitutional Relations of the Dermatoses," thence proceeding to detail. The half on nervous diseases begins with a very good summing up of the present status of the neurone theory, evidently written by a master. Then follows symptomatology, excellently presented; next, the reflexes, the neuroses, etc. This form of book is to be especially commended because not overburdened with words, yet clearly presenting essential points for every practitioner who pretends to keep abreast with ever-advancing literature.—J. M. T.

LESSONS IN TRUTH. By H. Emilie Cady. Unity Tract Society, Kansas City, Mo.

The invasion of the fields both of medicine and of theology by optimistic metaphysicians, under the name of "new thought" and a number of lesser titles, marks a distinctive era in progress. The subject has interested the reviewer, and in pursuance of this thought he presents a few facts about a little book of 150 pages, which is the simplest and clearest of these expositions of monism (or perhaps it might be called optimistic pantheism) that has come under his attention. A number of other books on similar subjects, while containing merit, are marred by prejudices, by the obvious limitations of individual ignorance, insufficiency of breadth of view—in short, by glaring rawness. This little book offends in none of these respects, but presents succinctly wholesome rules of moral conduct, which are designed to accomplish also physical betterment. Taking, as most of these writers do, the fundamental ennunciations of Christ and interpreting them optimistically, sometimes wisely and sometimes undesirably, Dr. Cady (for we understand that she was trained as a physician) simplifies the matter by keeping to first principles, chiefly the instinctive laws of belief which are made clear by a careful consideration of the Christian religion.

The chief principles presented are formed by achieving a concept of the individual as being an essential part of the divine scheme, the spirit being a mere manifestation of the all-pervading good which dominates the world; and offering principles of guidance which, certainly, if employed judiciously, will go far toward purifying the soul and rejuvenating the body.

Next, the book makes for a clear exposition of faith, giving practical methods of everyday procedure, such as systematic denials of evil, of weakness, of irresponsibility and the like; also by making affirmations of good, of strength, of responsibility, by the pursuance of right

aims. Many of the aphorisms outlined are excellent, and, if utilized in the manner recommended, cannot fail to go far toward eliminating the morbid effects of psychic disturbances and apprehensions, reprehensible conceptions, and to bring both body and spirit up to, and maintain them on, a better, wholesomer, plane. The chief fault which might be suggested in practicing this optimistic pantheism is that it limits the sense of responsibility. Nevertheless, it must be admitted that the duty of the physician is plainly to initiate the principles suggested, to apply them wisely, as an important auxiliary to everyday treatment. It remains for him to interpret judiciously and to apply well-chosen recommendations with a full knowledge of the conditions existing. Indeed, we may go further and venture to assert that the physician who fails to do what has been suggested will thereby omit to exercise a most important function.—J. M. T.

BIOGRAPHIC CLINICS. Vols. IV and V. Essays Concerning the Influence of the Visual Function, Pathologic and Physiologic, upon the Health of the Patient. By George M. Gould, M.D. P. Blakiston's Son & Co., Philadelphia.

These exceedingly interesting essays, of great literary merit and far-reaching scientific significance, are reprinted, in the main, from a number of leading perdiodicals and now appear in book form. Dr. Gould has laid the whole realm of medicine under contribution through an exhaustive study of the causes and progress of complex instances of ill health, using as illustrations the history of many individuals prominent in diverse lines, a number of whom are of world-wide distinction. The fifth volume, now in our hands, deals with a final review of the ocular facts contributing to, or causative of, a variety of derangements. Professor H. Augustus Wilson contributes a chapter on the effects of these causes on spinal curvature. Certain of the chapters also present extensive histories of individuals who had previously experienced a variety of inefficient forms of treatment.

One of the most interesting chapters is that entitled, "The Conspiracy of Silence," in which the author shows how difficult it is to secure a candid hearing, even in scientific journals, for views unusual or iconoclastic. It is profoundly encouraging to some of us to read the narrative of rejections which a man so famous as Dr. Gould has suffered. However much one may feel inclined to doubt the potentiality of eye-strain in causing any or all human ailments, he is carried off his feet by the eloquence, the fire, and the brute mass of evidence presented so graphically by Dr. Gould. It is necessary that a prophet should arise, fearless, clarion-tongued, to stem the tide of incredulity which seems to influence many of our neurologists. Indeed, it is pertinent to remark that neurology needs a lot of ventilation, especially in the lines of physiology and clinical experience.—J. M. T.

THE NEW HYGIENE. Three Lectures on Prevention of Infectious Diseases. By Elie Metchnikoff. W. T. Keener & Co., Chicago, 1906.

This tiny volume, of one hundred pages, is a charming presentation, suitable for physicians or the laity, of Metchnikoff's well-known views on (1) the hygiene of the tissues; (2) the hygiene of the alimentary canal; (3) hygienic measures against syphilis. It may be commended most highly for general reading.—J. M. T.

Books and Monographs Received

The editor begs to acknowledge with thanks, the receipt of the following books and monographs:—

"Transactions of the American Climatological Association. For the Year 1906. Volume xxii." 1906.——"Tubercular Conditions of the Spine Requiring Surgical and Mechanical Relief." By De Forest Willard, Philadelphia. 1905.——"Knee Injuries, and How to Manage Them." By De Forest Willard, Philadelphia. 1906.——"Chronic Appendicitis." By William H. Morrison, Philadelphia. 1907.——"Insanity Cured by a New Treatment." By C. W. Suckling, Birmingham, England. 1907.——"Stamping Out Hereditary Diseases by Sterilizing the Sexes." By M. E. Van Meter, San Francisco, Cal. 1907.——"Some Aids in Teaching Climatology and Climatotherapy." By Guy Hinsdale, Hot Springs, Va. 1906.——"Radical Cure of Direct Inguinal Hernia." By G. G. Davis, Philadelphia. 1906.——"A Transverse

Incision for the Removal of the Appendix." By G. G. Davis, Philadelphia. 1906.——"A Method of Reduction of Congenital Luxation of the Hip by Manipulation." By G. G. Davis, Philadelphia. 1907.——"Resection of the Knee with the Object of Obtaining a Movable Joint." By G. G. Davis, Philadelphia. 1907.——"Trypsin in Cancer—a Preliminary Statement." By W. S. Bainbridge, New York. 1907.——"The Teaching of Laryngology and Rhinology in the Denver and Gross College of Medicine." By R. Levy, Denver, Colo. 1906. ——"Surgical Treatment of Tuberculosis of the Upper Air Passages and the Ear." By Robert Levy, Denver, Colo. 1906.——"Sarcoma of the Nose, with a Consideration of the Spontaneous Disappearance of Malignant Growths." By Robert Levy, Denver, Colo. 1906.——"Teaching the Deaf Child to Hear." By G. Hudson-Makuen, Philadelphia. 1906.——"The Physiology of Language and Its Relation to the Treatment of Stammering." By G. Hudson-Makuen, Philadelphia. 1906.——"Intra-nasal Conditions as Bearing Upon the Etiology of Diseases of the Ear." By G. Hudson-Makuen, Philadelphia. 1907.——"Abstract from the Annual Address of the President of the American Philosophical Society, delivered Friday, December 21, 1906."——"La Désinfection des Livres." By José Badía et Nicolás V. Greco, Buenos Aires, Argentine Republic. 1906.

The following have been received from the United States Department of Agriculture: "Twenty-second Annual Report of the Bureau of Animal Industry for the Year 1905." 1907. ——"Trichinosis: A Danger in the Use of Raw Pork for Food." By B. H. Ransom. 1907. ——"The Tobacco Thrips, a New and Destructive Enemy of Shade-grown Tobacco." By W. A. Hooker. 1907.——"The Advantage of Planting Heavy Cotton Seed." By H. J. Webber and E. B. Boykin. 1907.——"Capons and Caponizing." By R. R. Slocum. 1907.——"The Spring Grain-Aphis." By F. M. Webster. 1907.——"Leguminous Crops for Green Manuring." By C. V. Piper. 1907.——"The Application of Vegetative Propagation to Leguminous Forage Plants." By J. M. Westgate and G. W. Oliver. 1907.——"A Method of Eradicating Johnson Grass." By J. S. Cates and W. J. Spillman. 1907.——"The Grasshopper Problem and Alfalfa Culture." By F. M. Webster. 1907.——"Experiment Station Work, XL., March, 1907."

EDITORIAL STAFF.

Sajous's Analytical Cyclopædia of Practical Medicine.

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Original Articles

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DISEASE AND THE PREVENTION OF DISEASE IN EARLY LIFE.[1]

BY THOMAS MORGAN ROTCH, M.D.
Professor of Pediatrics, Harvard University.

(Continued from May.)

We now come to the second great division of disease:—

The Acquired.—Under this division of *acquired diseases* we again meet with different *varieties* and *classes.*

The first class is where disease, as has just been shown, may result from the mismanagement of normal *anatomical* and *physiological* conditions. This takes place when those who care for infants and young children ignorantly produce disease by forcing the functions of an early period of development to undertake the duties of a later period, and by overtaxing undeveloped functions. This class may well be called *mechanical,* and includes too prolonged confinement in school and forcing an undeveloped brain to assume a grade of study beyond its normal capacity. Many varieties of nervous phenomena are produced by overstudy, and can only be gotten rid of by absolute brain rest.

The reverse of this mechanical class is where the functions are not brought into use when ready to be used, and this may be called disease arising from *unwise and ignorant caution.* As examples of this class can be mentioned: (1) fear on the part of the care-taker to allow the infant to use its legs when they are ready and ought to be used; (2) overprotection from cool, fresh air in the nursery and sleeping room; (3) keeping in the house too

[1] An address given as one of the free lectures to the public at the Harvard Medical School, March 17, 1907.

much; (4) keeping from becoming accustomed to seeing people and to a moderate amount of sound; (5) keeping on with the breast milk, or with a properly modified cows' milk after about the twelfth month, a time when normally other food is indicated, owing to the functions of digestion having been developed to such a degree that they require a change of quality in the food: in other words, when a function is ready to be used it should be used or harm may follow.

We now come to another and more serious class of acquired diseases which, for want of a better name, we call the *diseases of nutrition.*

Here the manifest ignoring of Nature's physiological teaching has struck at the very centers of the infant's tissues and has produced actual organic disease of the tisssues. So far as we know, the cause of this nutritive class is almost entirely from errors in feeding. This includes not only a failure to adapt the food to the period of development of the digestive organs, but cases where parents and physicians consider more the age of the infant than its individual stage of development. This again enunciates what I have already said of the importance of studying an individual infant according to its own individuality. This also means that so far as the *food* is concerned, we should consider not alone what food would usually be indicated at a certain age, but making the food *fit* the individual's stage of development, no matter whether less or greater than normal. Finally this means a study of the individual's idiosyncrasies of digestion, as presented by the especial infant to be fed.

These diseases of nutrition play a great rôle, especially in the first two years of life. Although they may cause death in certain instances, yet their danger is mostly in making the individual vulnerable to other diseases which, according to their greater or less virulence, may lead to irreparable crippling and often death.

The representative three diseases of this class in infancy are rhachitis, infantile scorbutus and infantile atrophy. They all may be prevented by intelligent feeding and good hygiene. They all can be cured if recognized and properly treated in their early stages. The first two of these diseases are characterized by a definite pathology, the third by a notable absence of our knowledge in regard to its pathology.

The first of this group—rhachitis—although represented by nutritive disturbances of all the tissues and a marked symptom-complex of nervous manifestations, yet shows its most prominent organic pathology in the bones. It presents not only a lack of proper deposition of the lime salts in the formation of the bones, but great irregularity in the conversion of the cartilage into bone. In the normal process of the development of bone, the process

takes place with great regularity in the area of cartilage which separates the epiphyses from the bone-shaft. This area is called the "zone of proliferation." The great irregularity of the transformation of cartilage cells into bone is shown to such a degree in this zone of proliferation that we can recognize the disease rhachitis by an examination of this zone. Rhachitis is a disease of the first two years of life: its cause is faulty hygiene and a failure to adapt the elements of the food stuffs to the age and to the stage of development of the individual infant: its prophylaxis and treatment are therefore self-evident. Its results are deformities of the skeleton, a dilated stomach, and various nervous disturbances, such as convulsions and laryngospasmus. Rhachitic children become an easy prey not only to mechanical conditions such as deformities of the thorax from a lack of resistance to intrathoracic pressure, but also by their increased vulnerability to various pathogenic organisms.

Infantile scorbutus has a definite pathology shown by a great tendency to hæmorrhage, sometimes of the kidneys, again from the gums, which show the lesions of a stomatitis ulcerosa. Most significant of all, however, is a condition of subperiostial hæmorrhage from a slight degree to the most extreme. The cause, although pretty obscure, is recognized to at least partially arise from the use of the various patent foods. Even the most severe cases can usually be cured, the most powerful remedy being the administration of the vegetable acids.

Infantile atrophy is represented by extreme, progressive, continuous wasting of the tissues without perceptible cause, except that it is evidently closely connected with improper feeding, and showing great intractability to treatment. The power of digestion in these cases is usually good, but the process of absorption extremely limited. The treatment is to try to fit the elements of the food to the degree of the receptive power of the crippled absorbents.

Although the etiology of this entire nutritive group is very obscure, yet each member of the group has its own peculiar manifestations which separate the members from each other, classify them under one head, and present clearly a picture of a vice of nutrition.

This group of diseases is assuming a more and more important position among the morbid conditions belonging to the early years of life, as it is becoming evident that it is far more reaching in its effects, and influences to a much greater degree all the diseases of early life than in former years was recognized as possible. Thus the prognosis of all those diseases which have a definitely determined etiology is markedly graver where such diseases occur

in an infant who is suffering from one of these general disturbances of nutrition, and in this way especially both rhachitis and infantile atrophy have come to play a great and important rôle in our study of infantile diseases in general and in their therapeutics. When we consider the high mortality of these diseases when uncomplicated, and the greatly increased mortality of all diseases which are complicated by them, and when we recognize that these diseases are closely associated with improper food and hygiene, it becomes very evident that the proper therapeutic management of this group of diseases is of very great importance, and should demand especial study and care in the feeding in the early months and years of life. There is no doubt that if less attention was paid to the use of drugs in the various non-organic disturbances of the gastro-enteric tract in early infancy, and that if a more enlightened method of feeding were adopted by laymen and physicians, or rather by laymen who are intelligent enough to consult the more intelligent and advanced students of this subject, it would be possible to eradicate this entire group from its place among the various pathological conditions of early life, and that thousands of lives might easily be saved where they are now recklessly thrown away. This fact is explained by the strong position which theoretical ignorance holds in comparison with that practical and scientific knowledge which exists and is only waiting to be received, and to be given a fair trial in order to prove its wisdom and success. The field for purely dietetic treatment is an immense one, and such treatment will in the future, while supplanting the older methods of treatment, and we might say eradicating the causes of these nutritive diseases, possibly blot them out from our nomenclature, and make their pathology a museum relic of the past.

It is therefore well worth the time and thought of physicians and laity to discuss in detail the different members of this protean group of diseases, for a thorough knowledge as to the diagnosis and treatment of each one of them is of vast importance to us physicians who, while our mission is to cure, still hold as the highest object and aim of our art the study and practice of prophylaxis.

Finally we come to a class of *acquired* diseases which, according to their etiology, are as a group designated as *infectious*. This class, as a whole, although differing greatly in their clinical manifestations, are similar in that they are all caused by specific organisms. These organisms enter the body, remain there for variable periods, according to the nature of the organism, thus, as it were, going through with a period of incubation and finally showing symptoms which represent the evident beginning of the disease. After the initial symptoms are declared—and which constitute what is called the

prodromal stage of the disease and vary in length of time according to the infecting organism—specific results are left, each having its own identity, though all in their final destructive processes may show very similar changes.

While by inference we are led to believe that this whole group of acquired diseases is caused by specific organisms, we as yet have only determined exactly what the special organism is which produces special symptoms in a certain number of cases. In some instances also, although the disease is evidently produced by a specific organism or group of organisms, yet the especial primary infecting organism has not yet been differentiated from the group, and it may be that the group, rather than one of the group, will be proved eventually to be producing the symptoms. Instances of this class which probably simply mean the beginning of our final knowledge of the disease, are a number of diseases of the stomach and intestine and infectious osteomyelitis.

In other instances, where the violence of the onset and the general course of the disease evidently point towards infection, we have as yet not discovered any specific organism. Examples of such diseases are cholera infantum and mumps.

Again, there are a number of diseases which evidently are produced by a specific organism, and where the specific organism is, by some investigators, believed to have been differentiated, but where the differentiation has not been accepted as final. As examples of this class are the *micrococcus rheumaticus* in its relation to rheumatic fever and the *spirochæta pallida* in its relation to syphilis.

In contradistinction to this uncertain class of cases are those diseases where a specific, well recognized organism has been differentiated from other organisms by the culture growth and agglutination tests, and proved to be the primary cause of the disease. As examples of this class, where we think we know the exact cause in the sense of a definite organism, are such diseases as epidemic cerebrospinal meningitis and tubercular meningitis, where the spinal fluid is used to determine the organism, the "diplococcus intracellularis" in the former and the bacillus tuberculosis in the latter; typhoid fever and malaria, where a drop of the blood of the infected patient is used to determine in the first the bacillus of typhoid and in the second the plasmodiums, and finally diphtheria, where a smear from the mucous membrane of the throat or nose is used to determine the presence of the Klebs-Loeffler bacillus, and many other infections detected by special methods of examination. A description of the technic by which the especial infecting organism is differentiated and determined would here be out of place, but a general explanatory description

will aid to carry on the line of thought which leads up to understanding the treatment. When the prodromal symptoms are those pointing towards the brain and cord, a lumbar puncture is made and the fluid examined for various possible organisms, such as the pneumococcus, bacillus of tubercle and diplococcus intracellularis, and various culture media are used, such as bouillon and agar-agar. By the process of incubation the organisms are made to grow like seeds in a garden, and a differentiation carried out which, when found to correspond to an agglutination in the patient's blood, determines the special organism. In diseases such as typhoid fever and malaria the same general process is carried out by using a drop of the patient's blood. Having once determined the special infecting organism we can make use of the appropriate treatment.

Before speaking of the theory of treatment, however, it will be well to consider how these infecting organisms gain an entrance into the body, and how a true infection is accomplished by them. There are various portals of entrance: (1) through an abrasion of the outer skin; (2) a lesion, even slight, in the mouth, nose, and throat—in the latter especially through the tonsils; (3) the air-passages, larynx, trachea, lung; (4) the stomach and intestine; (5) the eye; (6) the Eustachian tubes, transmitting infecting organisms to the ear. For instance, we know that the intestines contain numerous organisms, both benign and pathogenic. If these organisms affect the intestinal contents by setting up fermentation they may cause sufficient irritation to produce diarrhœa, and yet remain saprophytes, and the patient is not infected. If, however, a continuation of the irritation produces an intestinal lesion, the patient becomes vulnerable and the pathogenic organisms may, through this lesion, gain an entrance into the tissues and true infection take place. As an instance of one of these intestinal infections, is a number of the diarrhœas of early life showing different symptoms according to the group, or special member of a group, of organisms which, as saprophytes, are producing irritation or absorption of their toxins. If, however, this irritation produces a lesion—for instance, an ulcer—this ulcer becomes a portal of entrance, and one of the pathogenic organisms, which has been previously living inactive in the intestine, may pass through this portal, infect the tissues and produce its specific disease. Notable in this class of cases is the bacillus dysenteriæ which plays such a prominent rôle in the intestinal diseases of early life, and especially raising the death-rate during the hot months of summer.

It is now believed that many of the acute infections enter through the tonsils, and it is therefore especially important to keep the mucous membrane of the mouth, throat, and nose in an absolutely healthy condition. The teeth

of children should be carefully attended to by the dentist as early as possible. Children as young as three years should be taken to the dentist, even if it is only to keep their teeth clean. Many an acute and even dangerous disease might in this way be avoided. Still more important is it when a child has a slight intestinal disturbance which may be simply saprophytic in its cause not to pass over lightly as a simple matter this disturbance, for at any moment, especially in the heated periods of the year, this saprophytic action may be replaced by the most violent forms of true infection, caused by the entrance of pathogenic bacteria which have been lurking in the intestine and watching for an opportunity to get in their often fatal work.

Every diarrhœa should be dealt with promptly and treated heroically by skilled hands. Many forms of treatment are called for in these acute infections of early life. These can only be carried out intelligently by those whose study and life work have fitted them to know when to use one or the other treatment, according to the special case. The symptoms of the same disease differ so in different individuals, and often also simulate so closely some other disease, that none but the trained physician can prescribe the proper treatment indicated by the special case. Neither mother nor nursery maid is fitted to diagnosticate disease in children, and still less so in infants. Many a life is lost by trifling with the early stages of a disease which to the untrained eye seems simple and benign, but to the physician's educated observation is fraught with danger. Especially do I warn mothers against relying on the apparent self-sufficient knowledge of nurses who have not been trained to diagnosticate and treat disease, but to receive instructions from the physician as to how they are to nurse it and carry out the physician's orders.

In order to impress upon those who care for the different periods of early life, the importance of what has just been said, I should like those who wish to preserve rather than to sacrifice the lives of infants and children to understand what modern medicine means as to diagnosis. I have already described how the exact diagnosis in certain cases is made by determining the specific organism which causes the disease. Pathogenic organisms infect different parts of the body according to their predilection for certain organs. Sometimes it is the endocardium, sometimes the joints, or again the intestines, lungs or kidney. Supposing that the diplococcus intracellularis has gained an entrance to the tissues by some means. This organism has a predilection for the membranes of the brain and spinal cord. Its presence, therefore, can be detected in the cerebrospinal fluid.

What renders the individual immune and either keeps him unaffected by the pathogenic organisms which have gained entrance to his tissues, or makes

him show only slight symptoms, or severe symptoms, or death of his tissues? It is the resisting power which his tissues possess to a greater or less degree. This resisting power consists of certain elements in the normal blood serum among which are those called opsonins and the white corpuscles of the blood. These opsonins affect the pathogenic organism in such a way that they prepare it for absorption by the white corpuscles:—the white corpuscles however cannot devour by absorption into themselves these pathogenic organisms unless they are prepared for such absorption. It then becomes a contest as to which shall win the battle—the pathogenic organisms overwhelming the resisting organisms with resulting crippling or death, or the resisting organisms being sufficiently powerful to devour the pathogenic, drive out the disease, and preserve the life of the tissues. These opsonins exist in all healthy living tissues, and are continually defending us and preserving our lives. In the future, disease, with few exceptions, instead of being treated by drugs will probably be treated by immune sera of the special pathogenic organisms which have been proved by culture and agglutination tests to be producing the special disease.

We have so far considered the subject of prophylaxis from the definite standpoints of life or death, but we should go still further and determine what is best and right in certain general questions which are continually brought before the physician by the laity. One of these is:—How shall the layman know when disease is present? When the child's care-taker is at all doubtful, if the child is noticed to be less bright and vigorous, with lessened appetite, and is irritable and restless at night, the wisest course is to consult a physician at once. Much valuable time is often saved in this way, in connection with averting disease. Again, the inquiry is frequently made:—granted that the child is slightly sick, is it advisable to treat it at once instead of waiting until it grows worse? In answer to this, we can only say, supposing that a small part of your house is on fire: do you wait for a general conflagration, thereby endangering the destruction of your entire property? or do you think that it is wise to notify the fire department at once? You surely would do the latter, appreciating that it is better to save a part than to sacrifice from ignorant apathy the whole. So it is in disease,—if, for instance, a child is attacked with osteomyelitis, even if a part of the bone becomes dead bone, it is better to remove that part of the diseased bone which at first is small, and thus save a large part of the shaft of the bone and obtain a useful arm, than to lose the whole arm and perhaps endanger the child's life.

Another question which, I am sorry to say, is one often not even asked, but decided by the people themselves, is whether when one child in a family is attacked with a contagious disease such as scarlet fever or whooping-cough,

the other children should be protected from acquiring the disease. The following facts will answer this question. In the first place, the parents in such cases think that it will be less trouble to allow all the children to have the disease at once, and thus get rid of the annoyance of having, possibly, each child have it separately with perhaps considerable intervals. In the second place, the parents usually do not appreciate that, although one child may have any of the contagious diseases in a very light form, the next child may develop a very severe form, although contracting the disease from this mild case. This is especially true of scarlet fever which, at times a very simple and innocent disease, may at other times be most virulent, resisting all treatment and killing in thirty-six hours. Even if a child is exposed to diphtheria, it may be kept from having the disease if immunized at once with antitoxin. Even if the special disease does not prove fatal, it may leave results which may never disappear, and may cripple the child forever, and often leave it in such a condition that it falls an easy prey to some other disease. An example of this is the greatly increased susceptibility to tuberculosis in children who are attacked with measles and whooping-cough. The following results may come either in the course of or as sequelæ to infectious diseases:—

1. Scarlet fever—liable even in mild cases to result in diseases of the heart, kidney, and ear. The scarlet fever organism may produce deafness, and if the child has the disease before it has learned to talk, a condition of mutism. Many deaf-mutes represent the terminal results of scarlet fever.

2. Measles may result in pneumonia and injury to the eyes.

3. Whooping-cough may result in pneumonia and overstrain of the heart and lungs, interfering with the child's growth.

In fact, all contagious diseases may be followed by results more serious than the original disease. From this it is very evident that if the parents willfully allow their children to contract diseases in order that they may get through with them while young, it is simply a question of chances as to whether they may be sacrificing their children's lives. I believe, as do all who have any regard for children's lives and future happiness, that you have no right to take these chances and this responsibility, whether you wish to or not. It is a crime to humanity, a crime to the State, and a disgraceful and unintelligent ignoring of the *parental instinct* of *protection*, which is inborn and should be lasting forever.

I am wondering what all this means to you. I am wondering whether you think, or have been led to think, about these things as I do. I am wondering whether you are thinking that enthusiasm on such an apparently small matter as the hygiene of early life is worth while. I am wondering whether you think that the very great enthusiasm which I feel is justified.

At any rate, I will tell you what I think, although I am aware that I am not speaking to an impressionable audience of one of the Latin races, or to an audience with the temperament of our own southern country. I am not ashamed to show my enthusiasm before a cool, level-headed New England audience. I can say this as I truly believe that we cannot possibly be too enthusiastic in learning to understand the physical and mental condition of the young. I know this much: that we developed human beings should all accomplish something of good in this world, something which will benefit our descendants, and not only satisfy our own sense of pleasure, our own vanity and our own ambition.

No matter how limited our capacities may be, this limitation is only comparative. Great discoveries in mechanics, in science, and especially in medical science, do not come suddenly. They are slowly evolved through generations by one small piece of knowledge being added to another, and thus gradually approaching the eve of discovery, until finally some brilliant, powerful brain, taking advantage of the past laborious work of others, announces a discovered truth. Witness the development of the cotton-gin, witness the perfection of photography, and the results of that new wonder—the Roentgen ray. Witness the slowly evolved discovery of antitoxin, with its resulting reduction of human death from diphtheria from 50 to 10 per cent.

You may not be a Virchow or a Pasteur, but these great minds did not evolve in a lifetime their great misnamed discoveries. Theirs was merely the master mind of the moment reaching their discoveries by stepping on the shoulders of hundreds of modest laboratory workers, each of whom had in former generations added their link to the chain of progressive knowledge: adding also their solution of the single factors of some great problem which they, too, were striving to solve, but which it was left to Virchow and to Pasteur to bring completed before the world.

We all of us can add some small piece to the ascending pyramid: some of us contributing more or less than others, but adding, little by little, to what may eventually end in some great blessing to humanity. Such humanity in the future will love to live itself, and be grateful that the accumulated knowledge of ages will preserve from untimely crippling or death the young life, which may be loved from a universal love for the brightness and healthy activity of a period of life when that activity is the most fascinating, or from that primeval "parental instinct" of love for its offspring, or from that highest and strongest of all civilized love—maternity.

I may be disappointed that my brain vigor and capacity for the highest order of useful work has not been given by Nature to me as it has to others,

but I have no right to find fault with Nature and to refuse to add my mite for the general good. My link in the chain of discovery may be a small one, but it is a link which, if broken, will perhaps delay the solution of some great world problem another half century.

I truly believe that each one of this audience can, if he so desires, add such a mite, each in the line of his own experience. In seeking for knowledge in regard to early life, I have consulted—and, I believe wisely, and certainly with infinite success—men and women, young and old, married and single, of all occupations and pursuits and ways of life, pagan or Christian—it mattered not to me.

Will you at least seriously consider giving a little of the knowledge, which I know you have, to those who will gladly take it and make use of it for humanity as a whole?

PURE DRUGS.[1]

By H. W. WILEY, M.D.

Chief of the Bureau of Chemistry, U. S. Department of Agriculture.

It is not a matter of wonder that the American Therapeutical Society should be interested in pure drugs. I am quite aware that the science of therapeutics is something very much more extensive than a knowledge of drugs and their uses. I need not call your attention to the fact that the common idea that drugs effect a cure is entirely erroneous. There are certain drugs which act as specifics for certain poisons and thus prevent further ravages of the poison, but do not cure the damage already done. These specifics are doubtless the most valuable part of the armament of the drug store, especially for emergency use. In addition to this, we have knowledge of the well-known properties of many drugs as alteratives, restoratives, tonics and stimulants. There are drugs, also, which produce specific effects upon the digestive tract, as in the production of emesis, or as a laxative. Another class of drugs produce effects upon the nerve-centers, either as sedatives or excitants. The skilled therapeutist, therefore, takes advantage of all these properties in the establishment of that environment in the case of a patient, which promotes the restorative and curative powers of nature. This knowledge must be supplemented by a careful study of the idiosyncrasies of the patient, a knowledge of his surroundings, and a skill and ability to so modify, change, or eliminate undesirable factors as to produce the most favorable

[1] Read before the American Therapeutic Society, May 4, 1907.

conditions for restoration to health. Thus all the problems of ventilation, of water supply, of food, and of exercise, are within the legitimate domain of therapy. The physician who seeks to restore the health of his patient must also be an adept of mental science, perhaps of Christian science. Every physician knows that by cheerfulness, agreeable mental pre-occupation and suggestion, the mind of the patient may be diverted to a greater or less extent from his ills and sufferings, and thus more favorable conditions of healing be secured.

The purpose of this paper, however, is not to give an outline of the system of therapeutics, but to call attention to some of the faults of the agents employed, namely, adulterated drugs. It is based on the assumption that the proper use of drugs is desirable, although I am well aware of the fact that the use of drugs is often abused. If a drug which is employed for therapeutic purposes does not have the qualities it is supposed to contain, the object of its use is necessarily lost.

Systematic attempts to control the character of drugs used in medicines have been in vogue for many years. Other societies than our own are engaged in this work, especially the American Pharmaceutical Society. The United States Pharmacopœia, the National Formulary, and other standard works are fruits of the activities along the lines of controlling the purity of drugs.

To the courtesy of Dr. L. F. Kebler, chief of the drug laboratory of the Department of Agriculture, I am indebted for the following facts relating to the control of drugs.

General interest was manifested in pure, honest drugs as long ago as the decade beginning with 1840. Before that period passed, a Federal law was enacted governing the importation of adulterated and spurious medicine, drugs and chemicals. This act became effective in 1848. The testimony which was taken preliminary to the passage of this act is extremely interesting. Previous to this time there had been established at the port of New York, an examiner of drugs, who, at the time mentioned, was Dr. M. J. Bailey. In his testimony he stated that he had no authority to examine into the purity of any article further than to enable him to judge of the value as stated in the invoice. He had, however, made it his business to study the nature of the drugs imported, and by so doing was able to give much valuable information on the fraudulent transactions connected with these products. He not infrequently found opium deprived of many of its active principles and adulterated with liquorice paste. Often this so-called opium was found infested with worms. In response to numerous questions asked by the Congressional Committee, Dr. Bailey stated that at least one-half of the drugs imported through

the custom house in New York were adulterated, or had deteriorated in value so that they were rendered not only worthless for medicinal use, but often dangerous. The traffic in adulterated drugs and medicines at that time was increasing, although the fraudulent articles were handled only occasionally by reputable dealers. Transactions of this character were chiefly confined to commission houses, where good, bad, and indifferent drugs were kept in quantities to suit the purchaser. It was also developed in the testimony of Dr. Bailey, that different qualities of medicinal agents were prepared for the American market, the better kind for the Atlantic Coast States, and those of an inferior grade for the West, meaning at that time what are now our Central States.

All this testimony of Dr. Bailey is extremely interesting at the present time, because it shows that more than a half century ago the character of drugs imported into the United States was far from satisfactory. In the half century during which drugs have been inspected, I think we can safely say that their character has materially improved, but that there is still much to be desired in the inspection of imported drugs cannot be denied.

A question of some importance in this matter, of an administrative character, is to what extent the recently enacted Food and Drugs Act will be applied to the inspection of drugs. This is a matter which is now before the Attorney-General of the United States, and what his final decision in the matter will be I am unable to say. The common construction placed upon laws of this kind, however, is that where an existing law relating to the same subject is not specifically repealed by a later law, it remains in full force and effect, except in so far as it may be modified, restricted or extended by the new law. If this principle of construction shall be adopted by the Attorney-General, it is evident that the inspection of drugs by the Treasury Department will continue as heretofore, and that an additional inspection of the character of the drugs, as required by the act of June 30, 1906, will be established. It is evident that while there are apparently two inspections provided for, that in the administration of the acts there will be only one, since the act itself associates the Secretary of the Treasury and the Secretary of Agriculture in the inspection of imported drugs. It may be well, therefore, to set forth the exact language of the new act, in order that it may be prominently kept in view.

The Act of June 30, 1906, specifies that an article shall be deemed adulterated in the case of drugs:—

"First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality, or purity, as determined by the test laid down in the

United States Pharmacopœia or National Formulary official at the time of investigation: Provided, that no drug defined in the United States Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality, or purity, be plainly stated on the bottle, box, or other container thereof although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.

"Second. If its strength or purity fall below the professed strength or quality under which it is sold."

The act defines the term misbranded in its relation to drugs as follows:—

"The term 'misbranded,' as used herein, shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design, or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the State, Territory or country in which it is manufactured or produced."

In case of drugs:—

"First. If it be an imitation of or offered for sale under the name of another article.

"Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fail to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein."

The collaboration of the Secretary of the Treasury and the Secretary of Agriculture in the inspection of drugs is provided for in section 11 of the act:—

"The Secretary of the Treasury shall deliver to the Secretary of Agriculture, upon his request from time to time, samples of foods and drugs which are being imported into the United States or offered for import, giving notice thereof to the owner or consignee, who may appear before the Secretary of Agriculture, and have the right to introduce testimony, and if it appear from the examination of such samples that any article of food or drug offered to be imported into the United States is adulterated or misbranded within the meaning of this act, or is otherwise dangerous to the health of the people of the United States, or is of a kind forbidden entry into, or forbidden to be sold or restricted in sale in the country in which it is made or from which it

is exported, or is otherwise falsely labeled in any respect, the said article shall be refused admission, and the Secretary of the Treasury shall refuse delivery to the consignee and shall cause the destruction of any goods refused delivery which shall not be exported by the consignee within three months from the date of notice of such refusal under such regulations as the Secretary of the Treasury may prescribe."

It may be of interest in this connection to give some idea of the magnitude of the drug business in this country. It is estimated that there are at least 50,000 different kinds of drug products, proprietary and otherwise, at present placed on the market in the United States. Of these only about 1500 are described in the United States Pharmacopœia and National Formulary. A large number of products other than those recognized by the United States Pharmacopœia and National Formulary are sold under standards fixed upon the labels themselves.

It is difficult to tell just what percentage of the drugs is affected by the adulteration provision of the law. If we should say that about 20 per cent. is so affected, it would probably not be an extravagant expression. That would leave, say 40,000 articles of drugs to which the law does not apply in any respect except in regard to misbranding.

The misbranding clause of the act, as will be seen, is very comprehensive and has already been instrumental in securing long-needed reforms. It has been the practice in the past to place drugs upon the market of an uncertain, and in many cases unknown, composition; sometimes, too, they have been of a questionable composition. We need only look over the literature of the day to see how extravagant the language has often been in representing the merits of these drugs. Apparently there has been little restraint placed upon the imagination in the use of qualifying adjectives portraying the merits of these substances. Not only have these drugs been advertised directly to the laity, as we all know, but even in advertising to the profession, either medical or pharmaceutical, the most misleading and extravagant representations have been made. A very effective method in advertising to the laity is to represent the substance as a "cure;" even surgical cases which could not be reached by medicaments of this kind, have been represented as entirely cured by a few doses of the drug in question. I may mention some of these so-called cures which have been prominently brought to our attention in the last few months since the passage of the Food and Drugs Act, namely:—

"Cancer cure," "consumption cure," Bright's disease cure," "diabetes cure," "gall-stone cure (positive)," "appendicitis cure," "small-pox cure," "scarlet fever cure," "yellow fever cure."

Examinations showed that these so-called "cures" were made up of a single simple drug or a mixture of two or more drugs without any specific action whatever on the diseases in question.

That medicines frequently vary and are sometimes below, and less frequently above the standard, is well known. It appears, however, at the present time that the great majority of the manufacturers are endeavoring to supply the trade with the best goods that science and care can produce. Unfortunately, there appear to be some manufacturers, dealers, and promotors who care little for the purity and character of their goods, or the health and welfare of their customers. The entire business which these people conduct is shrouded in mysticism and craft. Apparently, their sole object seems to be to separate their victims from their hard-earned money. To what subterfuges the manufacturer of such goods may resort is illustrated by the following example: Elixir of valerian had established a good reputation as a nerve sedative, but the preparation as usually put up did not appear to appeal to a sufficient number of customers to satisfy certain dealers, and in order to accomplish their ends and secure a wider market for their products, morphine was added as one of the ingredients of this elixir. Naturally, the patients who were consuming the remedy soon became very much attached to it, and this modification, or sophistication of the mixture of valerian rapidly displaced the genuine article which contained no morphine, and was looked upon by many as almost miraculous in its action. It is reported that in one case the street in front of the business place of a certain manufacturer of this product was frequently seen lined with carriages bringing women from far and near to procure the drug. At the present time the consumers of this drug will see that what they have been really consuming has not been the elixir of valerian, as they supposed, but a preparation of morphine. Many other cases of similar character are daily brought to the attention of the drug laboratory of the bureau of chemistry; cases in which in the past it has been contended that none of the habit-forming drugs were present, but that the medicine as sold was of the purest possible character. We have seen cases where the former statements have been replaced as follows: "This preparation contains one-half grain of morphine sulphate and four grains of chloral hydrate per fluid ounce." This is sufficient to show the absolutely misleading and false character of the former representation.

I only call attention to the following facts in order to emphasize something which we probably all know, namely, that many of the persons who engage in the manufacture of such remedies, or products, as I have mentioned, are wholly incompetent and ignorant of all scientific knowledge of pharmacy or

therapeutics. You will be surprised to learn of the dense ignorance of many people who have appeared before the bureau to call attention to the character of their wares which they have to offer. It seems incredible to think that the manufacture and distribution of remedies in this enlightened country should fall into such hands. It is our common experience to meet with individuals who are not even in possession of the most elementary knowledge of either pharmacy or medicine, yet these persons are permitted, under the various State laws and under the National law, to concoct almost any agent which they are inclined to traffic in and sell it directly to the customer. When we remember that the physician or the pharmacist is not permitted to practice his profession until he has taken a long course of training, received a degree, and passed an additional examination before a medical examining board, it seems almost incredible that such a condition of affairs should be permitted.

I believe that one of the most effective methods for the control of such remedies would be the requirement that no one should be allowed to advertise or offer for sale to the public in any community, any remedy of any kind, who has not passed an examination such as has been mentioned, and received a license to dispense medicines and prescribe for patients in the locality mentioned. If all the manufacturers, proprietors, and purveyors of patent medicines were required to do this, the trade in these articles would be paralyzed. For instance, if a celebrated physician, living in Columbus, Ohio, desires to prescribe for patients in Washington, and sell his medicines here, he would be required to come before a local examining board and pass his examination and secure a certificate before he could do this. If this were adopted by every community in the United States, the Columbus trade in patent medicines would be extremely restricted.

Since the purity of many drugs must be judged practically by the standards set up by the Pharmacopœia, it is interesting to note that since the Pharmacopœia has become the legal standard under the Federal law, many manufacturers are objecting to its provisions. In former years, when there was no legal action to be taken in connection with the Pharmacopœia, these provisions went largely unnoticed. I, of course, would not claim for a moment that the Pharmacopœia's standards are always just; some of them are possibly too severe, that is, they require a higher degree of purity than can be secured by ordinary scientific care. For instance, we all know how difficult it is to make pure water, or pure alcohol; mere traces of foreign matters remain, and if it should be required that even they be eliminated, the cost of the product would be such that it would not be available for practical use. I do not think that the standards in the Pharmacopœia should be construed in

any such manner. A standard is set up which, perhaps, in some respects is ideal, but I do not believe that it was meant by the framers of that book that it should be a prohibitive standard. The standards of the Pharmacopœia, in other words, should be construed as the laws are construed, namely, to secure the purposes for which they were enacted. The Pharmacopœia was devised to secure a high grade of purity in products and certain standards of quality, and when manufacturers secure these ends, they have complied with the requirements of the standards.

The Department of Agriculture has had many protests from dealers, manufacturers, and importers, against the rigid application of the Pharmacopœia's standards to their goods. Some importers even claim that the standards in many cases are absolutely unreasonable and cannot be complied with. On the other hand, other dealers and importers deny this by asserting that with a reasonable degree of care the standards in general might be fully met. One large dealer held that it would be impossible to bring digitalis leaves of proper character into this country. When informed that there did not appear to be any difficulty on the part of foreign manufacturers and dealers in securing leaves from plants of a second year's growth at the commencement of flowering, and that physicians preferred not to use any preparation of digitalis leaves of uncertain quality, he replied as follows: "To go into the foreign markets to secure an article of digitalis, of which we import many tons each year, with an effort to get only the goods which are collected from plants of the second year's growth at the commencement of flowering, may be aptly compared to securing the left hind-leg of a rabbit, killed by the light of the moon, in a grave-yard, by a cross-eyed negro." It might be interesting to note here that this same dealer, when he was informed that the department was not prepared to render a decision which would permit the importation of goods of the character desired, very generously admitted that there was no reason for lowering the standard of any crude medicinal plant product, because there was no trouble whatever in securing the same complying with the prescribed standards.

You are all acquainted with the experience of the committee of revision of the Pharmacopœia, which has been besieged with requests that the standards of certain products be changed. Some of these requests appear to be reasonable and the committee of revision has made certain slight changes in the interests of justice, but none of a character to materially lower the standard required for crude drugs.

I cannot close these remarks on pure and honest drugs without calling attention to some faults in the medical profession respecting them. I fear

it is too much the practice in modern medical education to neglect some of the fundamental principles which it seems to me every physician should master, namely, the principles of medical chemistry, of pharmacy and of therapeutics. While I admit that the promiscuous mixing of drugs is for the most part purely empirical, it does happen that in the study of particular cases certain changes of the quantities of the ingredients of a prescription are indicated, hence the practicing physician must regard as a necessity the possession of ability to properly adapt a prescription to the needs of his patient. Ready-made clothes, I will admit, are cheaper and as a rule are quite presentable. Even those who are subject to the edicts of fashion are not free from wearing certain "hand-me-down" garments, such as hats and shoes, but the well-dressed gentleman depends upon his tailor to fit his clothes, while for working purposes and for general use the ready-made article may be employed. So it is true that in the practice of medicine the drugs which are manufactured in large quantities for specific purposes may be very generally employed, but the real art of the physician in the administration of medicines is the composition of the prescription. We all know it is much easier to say to a patient, instead of writing a prescription, "go to the drug store and get a bottle of such or such a remedy;" that requires no attention, no study, and no care. But that is not practicing medicine—that is aiding the sale of proprietary remedies. Therefore, it seems to me that it is just as important that the physician should be ready, able, and willing to write a prescription as that he should expect the druggist to have on his shelves, pure and honest drugs with which the medicine prescribed may be compounded. Thus the two great provisions working together will be able to secure the blessings of pure goods and pure drugs, which should come as a right to every consumer.

ACUTE PANCREATITIS AND MULTIPLE FAT NECROSIS.

By F. G. BUSHNELL, M.D.

Pathologist, Stephen Ralli Memorial, Worthing, Sussex, England.

A. T. 3.—Aged 40. The patient was admitted on January 14, 1906, under the care of Mr. Toides, F.R.C.S., surgeon to the Sussex County Hospital. Twenty-four hours previously she was taken with sudden epigastric pain. There was no sickness. The abdomen moved well. The pulse-rate was 80 and the temperature was normal. The bowels were open 24 hours before onset of pain.

On January 15th, pulse-rate was 120. There was tenderness in epigas-

trium and right iliac fossa. The abdomen worked well in upper part. Operation by Mr. Toides.

Some smoky fluid was found on opening the abdomen. Numerous omental and subperitoneal fat necroses were seen, but the pancreas was not swollen. The appendix, tubes, and ovaries were natural. There was a small fibroid in posterior wall of uterus. The cavity was washed out and sewed up.

She sank gradually and died on January 16, 1906, at 12.30 P. M. The post-mortem was made on January 17th, by Dr. Reynolds, M.B. The abdominal walls were 8 inches thick; fat was increased in omenta; there was turbid, sanious fluid in abdomen. The foramen of Winston was patent. The parietal and visceral peritoneum were covered with areas of fat-necroses, from a pin's head to a pea in size, especially around the pancreas and in small sac. The stomach, duodenum, and intestines showed no signs of catarrh to the unaided eye. They were not thickened or thinned. About 3 centimeters from the entrance of common duct was a swelling, about 1.5 centimeters in size, oval, firm, and movable below mucosa. Cæcum and colon walls were thick, hyperæmic; liver enlarged and red, but ducts not dilated. The gall-bladder contained chocolate-colored bile, but no calculi and no signs of catarrh. The pancreatic duct joined the common bile-duct about 3 centimeters from end, and was patent, narrow, and its walls thin, but contained no calculi. Pancreas measured 16 centimeters in length; its tissues were firm and doughy; section showed areas of hæmorrhage, recent and of longer duration. Its color was pale yellow, beefy and dark red. It was œdematous. The radicles of splenic veins thrombosed, as also was the vein itself. The splenic, hepatic, coronary and superior mesenteric arteries contained a little fluid blood. The aorta showed atheroma about the entrance of the cœliac axis and superior mesenteric artery. The mesenteric and lumbar glands were somewhat enlarged and yellowish, soft; some showed blood extravasations. Spleen was slightly enlarged, its pulp soft and diffluent. Peripancreatic tissues were œdematous; fat-necroses were numerous. There were soft, semi-fluid areas of light chocolate color, especially seen over right kidney. The kidneys were enlarged, of a dark red color, firm, and the capsule stripped easily. The surface was mottled; cortex and medulla of about normal ratio. The pelvic fat was increased.

Microscopic Changes.—The pancreas showed hæmorrhages and areas of necrosis, with leucocytic zone at borders, evidently of ante-mortem origin. The nuclei showed karyolysis, karyorrhexis and pyknosis in necrotic areas. The interlobular vessels were engorged. Areas of tissue resembling latticework were seen. Islands of Langerhans unaffected. No bacilli were seen.

Epithelium of ducts was, in places, desquamated. Vessels contained leucocytes and shed endothelium, others were thrombosed; some were necrotic. There was no clear evidence in sections examined of arteriosclerosis. There were bundles of radiating crystals as of fatty areas and calcium.

Liver.—The periphery of lobules showed fatty degeneration, and the parenchyma cloudy swelling and congestion. No amyloid change.

Kidney.—Showed cloudy swelling of the tubules; the convoluted tubules, or intermediary part, escaping. Malpighian bodies showed slight increase of nuclei. No hæmorrhage present. No amyloid changes. There was decided congestion. Interstitial changes were not present.

Duodenum.—The duodenum showed necrotic condition of mucosa and a polyadenoma of Brünner's gland.

Spleen.—The spleen showed congestion.

A smear from pancreatic juice showed cocci (in pairs and threes), —, Gram +: diplococci bacilli capsulated, and short streptococcal chains.

The culture from gall-bladder showed colon-like bacilli and cocci in pairs and short chains, Gram +.

The bacillus isolated gives characteristics of the bacillus coli communis.

Litmus	Glucose	Maltose	Sucrose	Lactose	Dextrose
+ °	+ g	+	+	+	° −
Glucose red bleached 3d day	Neutral red agar bleached	Tauro-cholate glucose +	Nitrate nitrite	Lead black 4th day	Peptone Widal

Gelatine.—Streak, moderate white growth. Stab, moderate white growth, no liquid.

Shake bubbles on third day.

Agar.—Luxuriant, moist, whitish growth, irridescent. Microscopic appearance: bacilli, straight, round or pointed ends, in pairs or singly, Gram —. From gall-bladder, also diplococci and short chains of cocci were obtained. From pancreas, a coli-like organism and some large bacilli with square ends. Gram +, grew in broth.

Several cases of this fatal and interesting affection have been recorded in the Lancet and in the British Medical Journal. It may be compared to a gastric erosion in respect of the ease and extent to which grave hæmorrhage follows on small local damages to tissues which have a powerful (digestive) secretory function. The origin of the local damage may vary, being circulatory, septic, or due to changes in the vessel wall in different cases.

The fat necroses are certainly secondary to the abnormal diffusion of the steapsin of the pancreatic juice and its subsequent action in the fat. A summary of the chief experimental work bearing on the subject is as follows:—

1. Flexner produced acute hæmorrhagic pancreatitis by injecting gastric juice into the duct of Wirsung; and Opie by injecting bile in dogs.

2. Opie, by ligating the pancreatic ducts of cats, produced necrosis of the abdominal wall fat, and of fat elsewhere.

3. Endarteritis is described by Dürck in the pancreatic vessels, also embolism or thrombosis.

4. The presence of bacteria in the pancreatic juice and duct is stated by Metchnikoff to be usual in the vertebrata.

5. The fluid from these pancreatic cystic swellings may be sterile (British Medical Journal, February 27th).

6. Flexner has demonstrated steapsin in fat necroses which are frequently sterile.

7. Fat necrosis may be caused by the action of the pancreatic juice, but not by trypsin. (Hildebrand and Dettner.)

8. H. A. Williams produced fat necroses by placing pieces of pancreas under the skin and into perirenal fat of dogs.

9. Duodenal catarrh, biliary calculi, bacterial injection of pancreas, renal cirrhosis, and alcoholism are frequently associated with the disease. (Mayo Robson.)

P. S.—The specimens and microscopic preparations were exhibited at the Brighton and Sussex Medico-Chirurgical Society. The lantern-slides were by Dr. Spitta and Mr. Caush, H.D.S.

Special Article

THE SHORTCOMINGS OF PHYSIOLOGY AS THE CHIEF OBSTACLE TO MEDICAL PROGRESS. THE NEED OF EDITORIAL INTERVENTION IN SUCH QUESTIONS.[1]

By C. E. de M. SAJOUS, M.D.
PHILADELPHIA.

The medical history of our country may be said never to have gone through a period so replete with lamentations as to the worthlessness of medical treatment. A curious feature of the question is that the prevailing

[1] Read before the American Medical Editors' Association, June 1st, 1907.

pessimism may be said to have originated in that great, though young, institution of learning, the Johns Hopkins University, from which we had every reason to expect light in an opposite direction. Osler's declaration that of the action of drugs of which "we knew little" though we "put them into bodies the action of which we know less," sustained by Llewellys F. Barker's estimate published about the same time, "that drugs of *unknown* physiological action cannot *conscientiously* be set to act upon bodily tissue in disease in which we are ignorant of *deviations from the normal,*" sinks deeply into the very foundation of our professional ethics. Indeed, it involves the sweeping conclusion that our ignorance in this connection at least, applies to disease as well as to therapeutics—in a word, to all that which endows us with the right to accept, with any degree of self-respect, the confidence which suffering humanity places in us.

It is not my purpose to take issue with these frank expressions of opinion. In fact, were I to do so, I would conceal similar conclusions reached nearly twenty years ago, when as editor of the Annual of the Universal Medical Sciences, it became my lot to collate, with the valued collaboration of many associates, the multitude of data, clinical and experimental, which were accumulating from year to year. I must lay stress upon a cardinal feature of my position in the question, however, namely, that I am a pessimist, a skeptic, only in so far as the *prevailing* Medicine is concerned, the Medicine taught by Osler himself—the Medicine of our day. Indeed, it is becoming more and more difficult for an honest man to practice medicine at all, if Oslerian declarations concerning therapeutics—after all the only feature of our work which represents a return for the fees accepted—are at all to be taken as standard. And well may Osler's views be taken seriously, for it is not only in our country that Medicine has lost ground in the estimate of its best informed devotees, but in Europe as well. Skoda's dictum of several years' standing, "that we can diagnose disease, describe it, and get a grasp of it, but we dare not expect by any means to cure it," has drifted along, on the ripples of time, until, in the year of our Lord, 1907, the president of a prominent British Society, Dr. A. H. Brampton, found it opportune to declare that "if any daring member has introduced a subject bearing on medical treatment, it has been with an apologetic air and humble mien, well knowing that if his remarks had any reference to the utility of drugs in the treatment of disease they would be subjected to good-humored banter, and received by those sitting in the seat of the scornful with amused incredulity."

Such a condition of things is a sad reflection upon the painstaking labors of the army of conscientious investigators and clinicians who have devoted

their lives to Medicine and its collateral branches. And far more deplorable still, are its consequences upon the welfare of those who entrust their lives in our hands—all civilized mankind, we may say. So great is the importance of this question, so far-reaching are its results, that it has seemed to me to demand a searching inquiry. With our patients we proceed at once to determine the nature of the ailment; may Medicine itself not be susceptible to a similar procedure? May we not, treating it as an aggregate of various branches, scrutinize each branch in turn as though it were an organ, study the influence it has upon all others, and, knowing the earnest desire of all medical investigators to advance common welfare, point out apparent flaws or deficiencies, and also new lines of thought or facts that the inquiry may have elicited?

This is the thought which suggested itself to my mind when as editor of the Annual, I was brought face to face with the mass of heterogeneous material we term Medicine, and with the yearly crop of contradictory theories upon each disease, modes of treatment, etc.—in a word, with the Medicine now derided by its very Masters. In the Preface of the 1888 issue, I had stated that the Annual was intended "to become a helpmate to the practitioner in his efforts to relieve suffering, and to assist the investigator by correlating facts, thus enabling him better to compare." Whether much comparison was indulged in by others I cannot say, but the fact remains that, as far as my own position in the matter was concerned, I began then and there to regard Medicine as I would a sick man, and to search for the diseased organ or organs.

I must frankly confess that the identity of the diseased organ was not difficult to find—namely: Physiology. Never, when it came to tracing a pathological condition, the effect of a remedy, the nature of a symptom, or any, in fact, of the many phenomena which to us practitioners are of paramount importance in diagnosis or therapeutics, was it possible to trace to its source the chain of events through which a normal function had more or less suddenly become abnormal. Invariably was it found that either the physiologists had failed altogether to discern the nature of a function, or, if an attempt had been made by them to explain it, it was laden with so many inconsistent and obviously mutually contradictory conclusions that—although perhaps quite scientific in the eyes of the physiologists themselves—it was of no use in the explanation of morbid conditions.

To illustrate these facts, I will submit a few of the more salient deficiencies referred to. The process of respiration, oxygenation of the blood and tissues at once asserts itself as of capital importance, since it involves the functions of all organs and the vital process, and of every morbid process.

In January, 1903, I urged that this function as taught by physiologists failed to satisfy our needs, and suggested new paths. Two years later, Professor Chas. R. Barnes, of the botanical department of the University of Chicago,[1] wrote: "I found it needful to examine the recent literature of respiration in animals, the aspect of the general subject with which I felt myself least familiar. I found to my great surprise, that animal physiologists have concerned themselves very little with the essential problems of respiration." Then, naming our best-known text-books on physiology, he added: "I found no treatment whatever, indeed, no mention whatever, of the real problems of respiration, that is, of what is happening in the tissues, the process of which these external phenomena are the sign." The late Sir Michael Foster[2] also closed a study on metabolism in the last edition of his text-book, with the statement that, after all, it "consists mostly of guesses and gaps."

Now, if the full meaning of these facts is apprehended, its appalling consequences will appear. The pulmonary air-cells are the main barriers to infection: their surface is the seat of multiplication of the pneumococcus, while in their walls develop the tubercle. It is here, therefore, that the initial lesions of the two great destroyers of mankind, pneumonia and tuberculosis, are formed. Now, adequate knowledge of the processes with which oxygen is concerned precisely in this location, would be a boon indeed: it would enable us probably to discern just how Nature defends the body against infection. Again, I must here call your attention to the fact that I pointed out two years before Beard,[3] that trypsin was the direct destructive agent in another dread disease, cancer. Trypsin is now known to take part in tissue-metabolism. If we had something better than the "guesses and gaps" referred to at our disposal to study this next greatest foe of humanity, I venture to suggest that it would soon be conquered.

The next greatest function is nutrition. Our first need to interpret intelligently gastro-intestinal infections, is a clear understanding of ferments. A most able physiologist, Benjamin Moore,[4] wrote recently: "Little is known regarding the chemical nature of enzymes, because all attempts to isolate them in a state of purity have hitherto failed." Another authority, Halliburton,[5] also writes: "Ferments are substances which have, to a great extent, eluded the grasp of the chemist."

The process through which the digested food-stuffs are absorbed from the alimentary canal is quite as obscure. Thus, Howell[6] writes: "The energy that controls absorption resides . . . . in the wall of the intestine, presumably in the epithelial cells, and constitutes a special form of imbibition which is not yet understood." According to Beddard,[7] "we know nothing of the path taken

by the products of proteid and carbohydrate digestion." Howell[8] also says: "The form in which proteid is absorbed remains . . . . a mystery."

Again, if, as text-books on physiology teach, the food-stuffs duly prepared, were taken up at all by the blood, they should be found in the latter. But, as stated by Mendel,[9] "Beyond the intestinal wall, in the blood and lymph-stream, the cleavage products seem, for the most part, to be missing." Finally, once in the blood, the fluid proteids should be readily diffusible to penetrate freely to the tissue-cell: Howell states: "The proteids of the blood, which are supposed to be so important for the nutrition of the tissues, are practically indiffusible, so far as we know. It is difficult to explain their passage from the blood through the capillary walls into the lymph."

The problem of nutrition is evidently no more solved by physiologists than those of respiration and tissue metabolism. The consequences to us are quite as deplorable. Asiatic cholera, typhoid, infantile diarrhœa, and kindred disorders, are all closely related with all intestinal functions, and in absorption lies the key-note to general infection. How can we possibly obtain a clear conception of all these dread diseases with such a foundation as physiology affords us?

The third great question is the manner in which function is incited in an organ. As shown by Claude Bernard, over fifty years ago, this is due to dilation of the arteries of that organ; more blood passing through it, it functionates. Notwithstanding considerable work done upon the problem ever since, the manner in which this function is carried out is quite unknown. Naturally, to admit more blood into an organ, the nutrient arteries must be dilated. Now, in his summary of vasomotor actions, Foster,[10] for instance, says that "there is no adequate evidence that these vasodilator fibers serve as channels for tonic dilating impulses or influences." Although Landois,[11] in the last edition of his text-book, holds that "although a center for vasodilator or vessel-relaxing nerves has not yet been demonstrated, the existence of such a center in the medulla may nevertheless be *suspected*," J. G. Curtis[12] states that "it is not known whether a vasodilator center is present in the bulb." The actual state of the question is aptly summarized by H. C. Chapman,[13] when he says: "Though numerous explanations have been offered of the manner in which the vasodilator nerves act, it must be admitted that none of them are satisfactory, and that it is not yet understood how this stimulation causes dilatation of the blood-vessels."

If the estimates upon this question are reduced to their simplest expression, our knowledge of the source and nature of vasodilator impulses is about as follows: We have a *problematic* center grafted upon another center known

to transmit impulses of an *opposite* kind; this problematic center is *supposed* to be the source of dilator impulses through nerves which have *not* been shown to act as channels for them, and which serve to dilate vessels which do so automatically when all nerves distributed to them are severed! In other words, the conception is illogical from start to finish; and to us practitioners, I will add, it is as misleading in the use of remedies, as it is intrinsically defective.

Now, the bearing of this physiological process upon pathogenesis and therapeutics may be said to be limited only by the total number of diseases to which the human frame is exposed, since all disorders are functional or organic, and all organic diseases impair function at a given time. A possible exception suggests itself, namely, the nervous system. But here, again, the *deus ex machina* of the function as a whole, the nerve-impulse, has remained hidden. As Landois[14] says, "the nature of the physiological nerve-stimulus in the normal body is not known." This accounts for the prevailing discouragement among the devotees of a great specialty, neurology, as expressed in the recent statement of a very diligent worker in that line, Joseph Collins,[15] that "we know very little more concerning the etiology, pathogenesis, and the clinical display of the majority of nervous diseases, organic and functional, than we did twenty years ago."

I could write page after page, replete with evidence of the same kind, showing that physiology is decidedly the diseased member of the Medical Group, and that it is to its shortcomings that the present deplorable position of Medicine is due.

It now becomes a question as to how the case is to be treated. In the title of this paper, I suggest "Editorial Intervention"—a phrase which suggests a militant attitude—the "big stick" as it were. Nothing can be further from my mind. Any one who has examined physiological lore as closely as I have, gentlemen, cannot but admire the enormous and patient labor that physiologists have devoted to the solution of the multitude of problems that the human organism offers, including the unsolved ones to which I have referred. That they have not met our needs is not for want of effort; it is due to another cause—one to which I will presently refer.

The remedy I would suggest is quite of another kind. It is based upon the personal conclusion that we cannot expect from physiologists the solutions we seek. The reason for this is plain: While their laboratory experiments, their only resource, elucidate certain phases of a question, they are totally inadequate to solve the whole question. We need other evidence, that afforded by all other auxilliary branches of science, including particularly that vast field

of research as to human functions, clinical medicine. Professor Pawlow, of St. Petersburg, wrote a few years ago,[16] after stating that physicians had pointed out the existence of gastric secretory nerves—a question which, I may add, thanks to his own labors, has been greatly elucidated—remarks: "Physiologists, on the other hand, had fruitlessly endeavored for decades to arrive at definite results upon this question. This is a striking, but by no means isolated, instance where the physician gives a more correct verdict concerning physiological processes than the physiologist himself; nor is it indeed strange. The world of pathological phenomena is nothing but an endless series of the most different and unusual combinations of physiological occurrences which never make their appearance in the normal course of life. It is a series of physiological experiments which Nature and life institute, often with such an interlinking of events as could never enter into the mind of the present-day physiologist, and which could scarcely be called into existence by means of the technical resources at our command. Clinical observation will consequently always remain a rich mine of physiological facts."

Gentlemen, this is the foundation of what I deem the best remedy in the case before us. Physiology is really ill only in one direction: it is overworked, and the field it covers is so vast that it cannot keep up with our needs. Why should we not take a hand, as it were, in their great task and contribute what our enormous field of information affords to aid them in elucidating the great questions which stand before us on every side? This, also, is where I would crave your intervention. Our young men are receiving an excellent education in many of our medical schools—quite equal, let me tell you, to that received in most European universities. Encourage their taking up the idea I have submitted: create a school of medical philosophers, who, taking up the experimental and clinical data contributed to the world's most valuable aggregate of knowledge—that devoted to the relief of human suffering—will do incalculable good.

On the whole, it was this thought which caused me to write "Internal Secretions." Its merits must be judged by others. I must confess, however, that when it came to the application of the tenets advanced in the first volume to the practical phase of Medicine and to those great questions which had defeated the efforts of physiologists, the enormous aid the functions of the internal secretions, as I had originally described them, afforded, was a revelation even to me. This is why I have laid stress on the fact that I am only in accord with Osler in so far as the prevailing Medicine is concerned. Upon the Medicine that the Internal Secretions affords, gentlemen, I must most emphatically say that pessimists can have no hold—at least the kind of hold *I* mean: that backed by solid evidence.

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Editorial

WHAT GOOD CAN WE GET FROM A CONSULTATION?

That consultant is most helpful who is the best general practitioner, who has the broadest grasp of the purposes, aims, and possibilities of curing disease. This is true in seeking help in any of the multifarious special departments of both medicine and surgery. To be sure, nature does the work of repair; the expert is chiefly a guide to health, but it is well within human power to distinctly and forcibly overcome bodily derangements. Critics among the laity may believe otherwise, but evidence is strong that we can modify and correct a multitude of conditions which, left to nature, would pass steadily on to disability or death. Pessimists there are in plenty among ourselves who boldly assert that our powers over the forces of nature are pitifully limited. Any or all of them can speak only of their personal experiences. If their own capacities have been demonstrated to be small, let them, in all honesty and fairness, confess their personal limitations. When men like Osler state (speaking from that height of authority which their own exploits in certain circumscribed realms of science seem to give them) that, after all, little can be accomplished, they use unfairly their accidental and not always well-earned position, to assail the integrity of professional possibilities. The point of view of the specialized teacher must be estimated in the light of his avowed habitual attitude. In the case of Osler it is that of pathology. Contemplation of dead-house findings, morphologic finalities, vast masses of clinical material which is best, or only to be, completed by the ultimate structural

revelations, tends to blind them to the resources of other departments of practical science.

Furthermore, to use again this charming man as illustration, he is an avowed materialist, a scoffer at therapeutics, has never studied seriously how to do the uttermost for a sick person. Such statements as he lets fall about therapeutics, like thunderbolts from the head of a self-appointed Jove, are therefore to the last degree misleading, unfair, an insult to that heritage of helpfulness evolved by centuries of observation, quite as accurate, and vastly more useful, than many of his (by no means well rounded) experiences. He has initiated a special school, a following, the natural outgrowth of his individual brilliancy, industry, personal charm, and stimulation, the members of which seem to have acquired the conviction that by them is known all that is worth knowing, or by way of being learned. They are permitted to dominate medical opinion far in excess of their demonstrable worth. In America, fortunately, there are immense resources of knowledge, especially on the line of therapeutics, which have no such clarion-tongued prophets as represent the dead-house men, even the bacteriologists. The time will come, it is ripe even now, when this priceless aggregation of careful observations will take philosophic shape, emerge from the chaos of inadequately systematized relationships, and declare itself in a mass of understandable rules.

Why have not these observers secured a better hearing hitherto? First of all, physiology has failed to supply us with many essential facts; but above all, physiologists have displayed over-much zeal in pursuing scholastic researches and not taken pains to reconcile many apparently unrelated facts to render them consistent with comprehensible principles, nor is there shown the practical relationships to clinical problems. It is altogether possible to do this; furthermore, it is being done, as will be seen shortly. Those of us who study the signs of the times, having before us the chief end of medical science, viz., to prevent and cure disease, there are observable forces, facts, acceptable conclusions in plenty to justify hopeful conclusions.

Take, for instance as a type, the very recent work on the opsonic index. Assuredly the mass of evidence already recorded is enough to warrant a genuine confidence that on this line alone we are nearing daylight. Herein is shown that there are within our grasp a group of principles capable of large utility in heretofore unsuspected measure. To be sure, the manifestation is chiefly through complicated laboratory methods not readily available by all. The fundamental requisite is a clearer working knowledge of the regulative mechanisms of the body. These, it is reasonable to assume, can be utilized by simpler means than by opsonic injections.

The point to be achieved is a knowledge of how to modify and enhance the auto-protective forces of the organism by other and simpler means. Among these are exactitudes in the employment of medicaments, better forms of these, and modifications in their forms.

Again, we have the greatly increasing knowledge of the means at our command of altering vasotonus, tissue respiration through what are called physiologic measures, rational and scientific adaptations of hygiene, diet, heat and cold, and above all, manipulations—laying on of hands. Finally, we must testify to the more potent force of all, utilization of the correct point of view, the inherent spiritual forces.

Let us examine for a moment the question of suggestion and the forcefulness of human personality. It is abundantly manifest in business enterprises. People are often persuaded by certain men to do what they in no wise intended, nor what they actually approve. Why? Because there resides in the proposer a power of compulsion. In business this is exercised for essentially selfish reasons. In medical problems it is not so, because, even where the physician may be actuated by considerations of professional gain, the ultimate result is betterment for the patient. When one physician voluntarily calls in a consultant he does so for one (or all) of three reasons: (1) to acquire more light on obscurities; (2) to share responsibility; or (3) to secure that personal uplift which is so often the sole saving agency.

This uplift is a factor by no means adequately understood, however subconsciously recognized. In the revision of methods in medical education, this subject demands development. In the absence of other instruction the physician must rely on his individual appreciation and should do what he can to attain skill in exerting such control over the subconsciousness of the patient as he may. This neglected province is being usurped by others, notably by the Eddyites, Dowieites, and metaphysicians, as they call themselves, of varying degrees of wisdom and sincerity. The splendid work of Rev. Ellwood Worcester, in Boston, in conjunction with Dr. Putnam, Dr. Cabot, Prof. Quackenbos and others, is a tremendous object-lesson for clergymen and physicians. They have shown conclusively how a judicious coöperation between the organized church and legitimate medicine can, and does, accomplish cures far beyond the expectations of either alone.

In our choice of a consultant we instinctively incline to that man who possesses those powers of personality which is the product of individual wisdom plus careful development of principles displayed by the more successful evangelists, prophets of new thought, and the more sincere of the religious fakirs.

It would be interesting to inquire what these principles are, and to suggest how they may be cultivated, for they can be acquired, but that is "another story."

A long experience in "growing up" in the medical fold has given me some insight into the question of why we get satisfactory help from some consultants and only disappointment and exasperation from others.

Assuming that in all we shall get a fair degree of scientific observation and experience, one other quality helps most, viz., a strong, buoyant, optimistic personality, whose mainspring is a sincere desire to aid. If the physician in charge can himself supply these personal characteristics it may only be essential that he exercise the judicial quality, the scientific acumen, the special familiarity with departmental problems or technique. Most of us could narrate scores of experiences which would arrange themselves in groups illustrating types of help, or non-help, from consultants. It would be worth while, too. Many tales have I heard from friends, of praise for good professional aid rendered those in the grasp of death; or exasperation to the limit of human endurance from men who failed in the essential points.

What we want above all things in our consultant is a well-rounded judgment, the product of individual qualifications, along with a clear sense of proportion; an appreciation of the instinctive promptings and restrictions of humanity, and an unconquerable faith in the rewards of a future life. I have found all these attributes in certain "country doctors." The defects exhibited in them have sometimes been insufficient confidence in technical knowledge, impairing certitude. That should not be. Large experience in meeting varied exigencies amply offsets many shortcomings in scientific attainments. On the contrary, the arrogant assumption of certain "successful consultants" ruffling bravely in cities is a dismal spectacle for men and gods.

In a paper on "the value of organization" (Journal of the American Medical Association) I called attention to the enormous utility of freely consulting with men among one's friends whose knowledge may be little greater than our own in mass, yet different in kind. The ground for hesitation is generally fear that the patient will lose confidence in the attendant by so doing; also that, by calling such counsel, the family may acquire the impression that the attendant lacks confidence in himself. When it is remembered that men of the law don't hesitate to freely seek counsel with others, this objection should fall.

A whole book might be written on the value of a consultation. It could be shown that vastly greater good would accrue, not only to the patient, but to the standing and potentiality of the general practitioner, provided physi-

cians would feel less timidity and recognize the broader aspects of their knowledge and their highest duties to themselves and humanity.

J. MADISON TAYLOR.

THE WEATHER AND HEALTH.

The evolutionists have been telling us during several decades past that the life of the individual is maintained in response to external stimuli, either physical or chemical; and that normal living is the right and continuous adjustment of internal relations to external relations. These dicta have now become truisms which no one thinks of disputing. It follows then, that physical states, healthful or ill, are to a large degree conditioned by atmospheric phenomena. And no one, perhaps, has put the matter upon a more scientific basis than Mr. Dexter,[1] when he concluded that "varying meteorological conditions affect directly the processes of oxidation, which are the chemical basis of life."

Probably most physicians seldom include the atmosphere among etiological factors in any given case. In a general way we realize, for instance, that rheumatism is worse in dull, damp, cloudy weather, without considering that there is here any especially scientific relation. There is, however, such a relation, which does not depend upon the fact that this weather is both psychically depressing and physically enervating. We have now about agreed that rheumatism is an infectious disease. And humid, dark, cloudy days are ideal for germ propagation; the clear air and the sunshine, on the other hand, having most powerful bactericidal properties. And a like relation no doubt obtains with regard to many other diseases of an infectious nature. "Colds" and catarrhal diseases are more easily contracted in gloomy and moist atmospheres; resistance is lowered, convalescence is retarded, and during this period relapses are to be feared. Excessive humidity is certainly inimical to health; and when to this is added great heat, a high mortality is inevitable. Dust is a most mischievous germ conveyer.

The circulatory system is affected by atmospheric conditions. A moderate altitude is tonic and invigorating; but at great heights, where the air is rarified, there is an abnormally low blood-pressure which may have grave consequences.

Those who live in hot climates are usually listless, uninventive, apathetic, and improvident; an evenly high temperature, especially if moist, almost

[1] Edward G. Dexter: "Weather Influences" (The Macmillans).

hopelessly weakens mind and body. There is certainly an intellectual attenuation; who can imagine a Plato or a Kant of the tropics? And the moral sense seems also blunted. He certainly was a genius—and ought to have a monument—who declared that after all, morality is only geography. At any rate, morality seems oftentimes conditioned upon climate. The most favorable temperature for health, which carries with it an aggressive energy, and which has produced the state which we call civilization, is that of the temperate zones, from which have come the brawn and brain of the human race. The dominant peoples live between the 25th and 55th parallels. Further north the available vital energy seems so largely expended in furnishing more body heat and stimulus for the necessary physiological functions, that there is little left for intellectual activity. And the energetic white, when he goes to live in the tropics, loses his virile habits, and oftentimes with them also his good behavior.

Mr. Dexter, from extensive investigation of school and police records, makes some interesting deductions concerning the effect of weather upon conduct: Certain "anabolic" conditions seem to accelerate the vital process of oxidation; while others, which are "catabolic," retard them. A living organism has a given amount of available energy, part of which is needed for the vital processes; while the rest—the reserve energy—goes into the intellectual processes. It is this reserve energy that the weather conditions play on. The anabolic meterological conditions would produce the greatest reserve energy by the stimulation of the oxidation process; and where the conditions are catabolic the reserve energy disappears. A sharp line must here be drawn between inclination and energy. "A disorderly act of the nature of an assault or misdemeanor can occur only at such a time as there be both energy and inclination or impulse to undertake it." Mr. Dexter finds, contrary to the general belief, that it is not cloudy, gloomy days which induce crime; but, on the contrary, clear, bracing days, with a superabundance of reserve energy misdirected. "Those meteorological conditions which are productive of misconduct in a broad sense of the word, are also productive of health and mental alertness; as a corollary, misconduct is the result of an excess of reserve energy not directed to some useful purpose." The general effect of catabolic conditions, it would seem, has been to increase the death rate; that of anabolic conditions, to increase the data of conduct.

JOHN B. HUBER.

ADDITIONAL NOTE ON HEADACHES.

It seems to me we should find an interesting and instructive addendum to my "Note on Headaches," in the last issue of THE CYCLOPÆDIA OF PRACTICAL MEDICINE, in the results of urinary analysis. Especially is this true whenever the cause of the headache is obscure and there are symptoms of gastro-intestinal disturbance. From this standpoint, I beg to repeat almost textually from a personal letter received from Dr. Frederic E. Sondern, of New York, whose thorough knowledge, great experience, and reliability in clinical laboratory work are well known here. Dr. Sondern writes as follows:—

"DEAR DR. ROBINSON:—In answer to your inquiry concerning the aid rendered by urine analysis in finding the etiological factor in cases of headache of obscure origin, I beg leave to present the following brief outline:—

"The most important point is to exclude the presence of evidences of a quiescent chronic nephritis of the contracting kidney type; these evidences often being very slight and easily overlooked. It is essential in this connection to have all the data to be obtained from a twenty-four-hour specimen, as the examination should not be limited to a search for albumin and casts.

"Toxæmia may also occasion headaches, and that a variety of types exists, is beyond question. Unfortunately, their origin is still obscure, and their isolation from the urine not yet accomplished. It is, however, a common observation that a toxæmia is usually accompanied by evidences in the urine of faulty body chemistry, but the headache and other symptoms must not be ascribed to this faulty metabolism, as it may be present without clinical symptoms. Consequently the degree of fault in body chemistry is no guide to the severity of the clinical symptoms, for it is the toxæmia, and not the faulty metabolism, which occasions them. This faulty body chemistry shows several types, which may occur singly or in groups, so to speak, as follows: Relative excess of ethereal sulphates, usually accompanied by an excess of indican. Relative excess of uric acid as compared to other nitrogenous excretory products. Evidences of an acidosis as shown by the presence of acetone with or without diacetic acid and beta-oxybutyric acid.

"Yours sincerely,

FREDERIC E. SONDERN."

It may be remarked that the practical outcome of urinalysis in obscure cases of headache connected with gastro-intestinal fermentation, eructations, and what not, all apparently included nowadays in "faulty metabolism," is only half satisfactory. We do, indeed, help the severity and frequency of many

recurrent headaches by suitable medication, or treatment (lavage above and below) of stomach and bowels, but rarely, or never, cure, up to the present time, true hemicrania. Why? Because, once again,[1] it is a constitutional neurosis. In many cases of headache we have merely the temporary result of a toxæmia. If we neutralize this toxæmia, well and good, and we cut short the headache as with a perfect antidote; if we neutralize merely, as it were, the result, or concomitance of the toxæmia ("faulty metabolism"), we are helpful, but not, strictly speaking, curative.

I, with many others, am now investigating results obtainable with Metchnikoff's "lactobacillus," the great generator of lactic acid in the intestine, and with the legitimate hope not to cure *all* forms of headaches, and certainly not true hemicrania, but to neutralize, perhaps, the toxæmia of those headaches which seem to be intimately associated with neurasthenia.

BEVERLEY ROBINSON.

Cyclopædia of Current Literature

ADIPOSE LAYER IN SUTURING, MANAGEMENT OF.

Text-books and teachers sometimes describe methods for giving special support for the adipose layer, by means of sutures which enter that layer. All sutures which enter the adipose layer set free a certain amount of fat, and this free liquid fat burrows in accordance with the principles of hydrostatics. The burrowing free fat leaves channels which must be closed by reparative processes, in a tissue which is badly equipped for carrying on repair.

The principle of depending upon atmospheric pressure for keeping adipose tissue surfaces in contact is not universally employed by surgeons. The wet leather disk used by boys as a toy for lifting stones, demonstrates the principle.

The method which the writer has employed for many years in abdominal work, is as follows: 1. A continuous suture of very small catgut for the peritoneum, in order to cause the least degree of irritation, which would lead to plastic exudation and subsequent peritoneal adhesions. 2. A continuous suture of small or large catgut for the posterior and anterior sheaths of the abdominal muscles, allowing atmospheric pressure to close out "dead spaces" evenly in the muscle tissue. 3. A continuous catgut suture through the skin only, carefully avoiding the adipose layer. If the adipose tissue of the wound is pressed snugly together before the last knot is tied, it will adhere so firmly and evenly that it will be difficult to separate it twenty-four hours later, if for any reason it becomes necessary to reopen the abdominal incision.

The author states that he has sutured many abdominal walls in which the adipose layer was more than two inches in thickness—sometimes nearly double that thickness—without having the

[1] See "Note on Headaches," May number of this journal.

wound break down. In his early experience, when special supports for the adipose layer were applied in or through that layer, he states that it was common enough to have the wound break down in four or five days. R. T. Morris (Surgery, Gynecology and Obstetrics, April, 1907).

BELL'S PALSY.

Refrigeration Bell's palsy is in all likelihood a Fallopian neuritis. The strands of the facial nerve are severely compressed by the inflammatory swelling in a rigid canal, and in this manner degeneration of the whole periphery of the nerve is induced. The predisposition of some individuals to a Fallopian neuritis, and its consequent facial palsy, rests largely on anatomical grounds, which are mainly comprised in the fact that the nerve has a tortuous and exposed course through a bony canal, probably often congenitally insufficient in size. L. Pierce Clark (American Journal of Medical Sciences, May, 1907).

CALCIUM SALTS AS CARDIAC TONICS.

The author believes that the free use of calcium salts has a tonic action on the heart in cases in which there is a tendency to cardiac failure. He has given calcium chloride in doses of from 5 to 10 grains, dissolved in water, every four hours, with most excellent results in cases of impending cardiac failure in pneumonia. The disagreeable saline taste of the salt is covered by one minim of the elixir of saccharin, containing $^1/_{20}$ of a grain of saccharin, for each 10 grains of calcium chloride. The mixture is given in water or milk, and is said not to interfere with the use of other remedies. The salt has also proved efficacious in cardiac disease, when the ventricular wall appeared to be losing power. In such cases, the lactophosphate or glycerophosphate of calcium may be employed. L. Brunton (British Medical Journal, March 16, 1907).

DETACHMENT OF PLACENTA, PREMATURE.

Aberrant pain and unexplained bleeding, even if slight, during pregnancy, should always suggest the possibility that placental separation is taking place. Such cases should be watched with the greatest care, and as soon as the provisional diagnosis is moderately certain, an active interference should be practiced up to the point of production of an amount of cervical dilatation sufficient for immediate delivery. In the rare cases in which the rigid unobliterated cervix is encountered, together with severe bleeding, valuable time should not be wasted, but either a vaginal or a classical Cæsarean section should be performed, according to the predilections and circumstances of the operator. W. R. Nicholson (New York Medical Journal, April 13, 1907).

EOSINOPHILES IN THE CIRCULATING BLOOD, DIAGNOSTIC AND PROGNOSTIC VALUE OF.

The writer concludes that it is of importance not only to count the leucocytes, but to make a careful differential count of the disease, until, in fact, the patient is dismissed. The entire disappearance or very marked diminution of the eosinophiles, together with a distinct leukopenia, goes far to establish the diagnosis of typhoid fever in doubtful cases. A normal or increased percentage of eosinophiles, other things being equal, speaks against typhoid. This holds good, of course, only for the febrile course of the disease. In cases of un-

doubted typhoid, the presence of eosinophiles, even in small numbers, during the first week is a favorable sign and speaks for a probable mild type. No typhoid fever patient should be considered cured or dismissed from observation before he has regained permanently at least a normal precentage of eosinophiles. Leonard Blumgart (Medical Record, April 6, 1907).

GASTRITIS, CHRONIC.

The writer believes that chronic gastritis, understanding by that term a chronic inflammation of the stomach accompanied by pathological changes, usually a diminution of the acidity, with more or less impairment of the rennin and pepsin secretions, and an excessive secretion of mucus, is a much less common disorder than is generally supposed. The diagnosis from the subjective symptoms merely, instead of by the well-known tests, is responsible for many incorrect diagnoses in the past.

It is a disorder of rather long duration, often many years, more common in males. Ewald says that many patients said to die of old age, really succumb to gastric atrophy. The writer has not found evidence of this, and his patients ranged between 20 and 50 years. It is impossible to ascribe it to any single cause, though alcohol has been considered as one of the most important. The writer agrees with Einhorn, that loss of weight is not a usual symptom, the patients are often well nourished, appetite may be good, and pain, other than discomfort after meals, may be altogether lacking. Other symptoms that may occur are constipation, flatulence, eructations, etc., but no one symptom or set of symptoms is characteristic.

Diagnosis may be based on the objective findings obtained by repeated examination of the stomach-contents and observation of the progress of the case. It seems that a rapid emptying of the stomach-contents is rather common, and it is not positively determined whether this is due to hypermotility or to pyloric insufficiency. It is difficult to overcome and if, as some think, it is compensatory, hurrying the food into the intestine where most of the digestion is accomplished, it is better not combated.

The author thinks that most patients can be practically cured by measures to restore the hydrochloric acid secretion, care in diet, and douches to free the stomach of the excessive mucus. Starches are better digested in the stomach in this condition than are proteids, and bearing this point in mind and remembering that all thermal, mechanical irritants are to be avoided, we have the key to dietetics in this disease. He advises lavage twice a week, using 30 grains each of sodium chloride and sodium bicarbonate to a pint of water at 100° F. For the purpose of dissolving mucus and increasing the secretion, the author used from 10 to 15 grains of sodium chloride and sodium bicarbonate in a glass of warm water, to be taken about fifteen minutes before meals. Pepsin and hydrochloric acid are not relied on by him as agents to increase the hydrochloric acid secretion. Vacations and out-of-door occupations are important aids. R. F. Chase (Journal American Medical Association, April 20, 1907).

HÆMORRHOIDS, INJECTIONS OF CARBOLIC ACID IN THE TREATMENT OF.

The author is of the opinion that this operation has a sphere of usefulness in the work of the general practitioner in dealing with selected cases in which

there is no local contraindication and in which general anæsthesia is undesirable. He suggests the following modifications of the usual technique: the fluid injected is a 50-per-cent. solution of carbolic acid in alcohol, but, before throwing it into the hæmorrhoid, this is rendered tense by the application of a wire snare around its base. The loop of the instrument is tightened gradually, so as to cause the tumor to become congested slowly, and the needle is plunged directly into the center of the mass, and several drops of the carbolic acid are injected. The snare is not removed until the entire mass has undergone thrombosis. Each tumor is treated in this way, and a local dressing of drying powder is applied. On the fourth day a dose of castor oil is given, and by the seventh or eighth day the necrotic tissue has usually sloughed off. Complete healing requires three to four weeks. The existence of deep fissures or large size of the hæmorrhoidal masses constitutes contraindications to the injection operation. The author lays especial stress on the use of the snare in order to produce congestion of the tumor and to restrict the amount of thrombosis, and on the employment of an alcoholic solution of the acid. Franck (Deutsche medizinische Wochenschrift, February 21, 1907; Medical Record, March 23, 1907).

IDIOPATHIC DILATATION OF THE COLON.

A study of a series of cases of idiopathic dilatation of the colon, collected mainly from the records of St. Thomas' Hospital, has been made by the writer. The main features of the cases have grouped themselves as follows: (1) A history of constipation from birth or from the earliest recollection, which is compatible, however, with fairly good health, until the final stage is at hand, the first sign of failure being often a loss of weight. (2) A constipation which often alternates with diarrhœa, and which at its worst is unlike that of obstruction, inasmuch as flatus is often passed and fæcal matter may be drained away through a rigid rectal tube. (3) Abdominal enlargement, variable or constant, often asymmetrical, with prominence in the left iliac region, the abdomen, though distended, being seldom tense and often surprisingly flaccid, and rarely presenting any impairment of resonance. (4) Slow alterations in shape, especially in the left iliac region, observable only with patience, quite unlike the tense peristalsis seen in real obstruction. (5) The absence or rarity of pain and vomiting.

Neither with real intestinal obstruction nor with simple nondilating constipation should there be any confusion when this condition is far advanced. The difficulty lies in distinguishing its early stage from a simple constipation, and in recognizing the point at which the case must pass from physician to surgeon. H. P. Hawkins (British Medical Journal, March 2, 1907).

INSANITY, CAUSES OF.

Heredity, according to the writer, has a small share in the causation of general paralysis; it is more frequently seen in relationship with melancholic than maniacal states. This has some connection with the longer life of persons nowadays. They not infrequently show the weight of years in mental depression. Melancholic states are much more likely to recur in families than maniacal disorders; all forms of insantiy, especially sensory hallucinations and their resulting delusions with fixed obsessions, are chiefly dependent on hereditary taint; moral imbecility and

asocial and criminal tendencies often arise in very neurotic families. Idiocy, mental weakness, and eccentricity are common in children of physically decadent parents. There is no such thing as transmission of any form of insanity direct, but there is a distinct danger of the passing on of a nervous instability which leads to mental disorder resulting from slight or even physiologic strain. Insane parents may have sane children. Consanguinity alone does not produce mental disorder. Eccentric and nervous (not insane) parents may give rise to whole families of idiots or defectives. G. H. Cavage (British Medical Journal, March 23, 1907).

MENINGISM AND MENINGITIS.

Without lesion of the meninges there may be a syndrome comprising many of the diagnostic symptoms of meningitis. Before recovery, such cases are often indistinguishable from meningitis. According to etiology, these cases may be classified as either reflex, toxæmic, or irritative. In all three classes there are circulatory changes, and in many cases direct action on the cortical and subcortical cells. In the toxæmic cases the nosotoxins circulating in the blood act as toxic doses of cerebral poisonous drugs do. Otologists have mostly to do with irritative and toxæmic cases. When any of these forms occur accidentally in a case with middle-ear disease, correct diagnosis becomes of the utmost importance. Any meningitic symptom may occur, but the erethistic are much more frequent than the depressive. The full development of pressure-symptoms or paralysis will usually exclude meningism. The readiness with which the symptoms of meningism may be quieted by small doses of morphine is a valuable diagnostic point. These cases of meningism are distinct from Quincke's "serous meningitis," in that there is no serous trouble. In the course of middle-ear disease, the symptoms of meningism often demand radical operation for cure, even if the mastoid be yet uninvolved. Chevalier Jackson (Journal of the American Medical Association, March 30, 1907).

OPSONIC TREATMENT OF BACTERIAL DISEASE.

Phagocytosis of bacteria goes on only in the presence of serum. The substances in the serum which excite the corpuscles to phagocytosis are designated by Wright as opsonins. The relation of the quantity of the opsonins of one individual's blood, to that of another, is referred to as the opsonic index. The opsonic index of any healthy individual is approximately equal to one, and that of a person who is the subject of a bacterial infection may be equal to one, less than one, or more than one.

Toxins, on being introduced into the system, affect the opsonic index—producing at first a lower opsonic index, a "negative phase" and second, a higher opsonic index, a "positive phase." A vaccine, *i.e.*, a standardized and sterilized suspension of bacteria in a saline solution, may be used to bring about a change in the opsonic index. If this vaccine is given in the proper doses and at the proper time, a higher opsonic index will result. This higher position of the resistance of the body may be sustained by the proper continuance of the vaccine inoculations. The giving of large doses of a vaccine simultaneously with the absorption of a quantity of toxin from a bacterial focus or at a time when the resistance of the body is excessively low, may cause a general in-

fection to develop suddenly from a local one.

The inoculation of vaccines is without doubt much safer when controlled by the taking of the opsonic index at frequent intervals, than when not so controlled. The application of the vaccines to therapeutics is quite broad. Any disease, the result of bacteria which can be grown in the laboratory, may be treated by the use of vaccines, and the good results so far obtained by this method of treatment warrant further trial in cases of infection. O. H. Brown (St. Louis Medical Review, April 13, 1907).

PANCREATITIS, ACUTE. ETIOLOGY.

From a review of 105 cases of acute pancreatitis, the writer concludes that gall-stones are probably the most common single cause of pancreatitis, 42 per cent. of the present series being due to this cause. Gastro-intestinal disorders are the next most common cause of acute pancreatitis. In the present series of cases about 30 per cent. belong to this group. Seventeen out of 32 of this group have a history of alcoholism. It is very probable that retrojection of bile may be caused by intestinal disorders closing the papilla of Vater. Acute pancreatitis may also be caused by many other conditions, among these being typhoid fever, tuberculosis, mumps, trauma, syphilis, emboli, appendicitis, malaria, and gastric ulcer.

The organism most commonly present is B. coli communis; next comes the streptococcus and the staphylococci. Typhoid fever is the most common of the acute febrile diseases present according to the previous histories of these cases of acute pancreatitis. In the present series 3 were directly associated with typhoid fever alone, and 4 had suffered from typhoid fever sometime before the onset of acute pancreatitis, and had apparently recovered; another had had typhoid fever and erysipelas. But 2 out of these 8 cases were associated with gall-stones. It should be kept in mind that in this latitude typhoid is the most common continued febrile disease. Anfin Egdhal (Johns Hopkins Hospital Bulletin, April, 1907).

RHEUMATIC ENDOCARDITIS, ACETO-SALICYLIC ACID IN.

In the case of a thin, anæmic girl of sixteen years, presenting the usual features of rheumatic endocarditis, with extreme debility, the writer used aceto-salicylic acid in 15-grain doses, when the temperature showed a tendency to rise. It was later continued in 7-grain doses thrice daily. In the author's view, the case seems to point out the superiority of this particular acid in rheumatic fever when the salicylates have been tried without positive and permanent effect. He does not overlook, however, the value of the opium and blisters used in this special case. For a ferruginous tonic following the acute symptoms, hæmoglobin is less liable to produce relapse than iron salts in combating the subsequent anæmia. He has found that salicylates aggravate epistaxis, which in his experience is not by any means an uncommon concomitant of rheumatism and is probably due to the accompanying anæmia. It is important that the aceto-salicylic acid should not be given in tabloid form unless the tabloids are crushed before administration. The powder suspended in water with a little mucilage acts well and has no unpleasant taste. He has not found aceto-salicylic acid produces headache or dyspepsia, but he thinks that it is contraindicated in chronic rheumatism occurring

Book Reviews

A MANUAL OF OBSTETRICS. By A. F. A. King, A.M., M.D., LL.D., Professor of Obstetrics in the Medical Department George Washington University, Washington, D. C., and in the University of Vermont. Tenth Edition, Revised and Enlarged, with 301 illustrations in the text and 3 plates. 673 pages. Lea Brothers and Co., Philadelphia and New York, 1907.

Dr. King's book, which has reached its tenth edition, has been thoroughly revised and brought into line with the modern teachings of obstetrics. The general arrangement is logical, and the various phases of obstetrics are practically and exhaustively treated. The chapter on maturation, fecundation and nutrition of the ovum has been entirely rewritten, and is a most thorough and painstaking exposition of the subject.

Since the book is intended as an outline of the rudiments and essentials of obstetrics, the presentation is necessarily brief, but the chapters dealing with the absolutely necessary knowledge for successful practice are written with commendable care and detail.

The diagnosis of pregnancy and the chapter relative to puerperal sepsis are especially worthy of mention. The chapter on the jurisprudence of midwifery is a valuable adjunct, often not found in the more pretentious treatises.

The illustrations are numerous, forty new engravings being added to the present edition.

Points which may be criticised are the failure to mention the importance of the recent work in blood-culture in the diagnosis of puerperal septicæmia; the rather cursory discussion of the liver toxins in the production of eclampsia, and the small space given to the description of modern methods of instrumental dilation of the cervix, the Bossi dilator and its modifications being merely mentioned.

Upon the whole, the book is compact, practical and of great value to the practitioner, as well as the student.—E. A. S.

PULMONARY TUBERCULOSIS: Its Modern and Specialized Treatment, with a Brief Account of the Methods of Study and Treatment at the Henry Phipps Institute of Philadelphia. By Albert Philip Francine, A.M. (Harv.), M.D. (U. of P.), of the Staff of the Henry Phipps Institute, Philadelphia; Examining Physician to the White Haven Sanatorium; Instructor in Medicine and Physician to the Medical Dispensary of the University of Pennsylvania; Medical Registrar to the Philadelphia Hospital. Illustrated. J. B. Lippincott Company, Philadelphia and London.

In the early pages of this book the author emphasizes the advantages of rest, fresh air, and certain forms of exercise for tuberculous patients. He also gives proper emphasis to climatic conditions and the diet, and then presents quite a lengthy dissertation on Koch's tuberculin. Under the heading of drugs a number of the most beneficial ones are carefully considered, and the use of Epsom salts is strongly advocated. After enumerating a number of conditions for which magnesium sulphate should be prescribed, the author says: "Whenever in doubt or whenever the patient complains of symptoms without definite indications for a particular drug—Epsom Salts."

The chapter on prophylaxis shows that the author is fully aware of the vital necessity for the careful execution of preventive measures, for under this heading he shows how to guard against infection and what precautions to take for the protection of others.

After careful inspection of this small volume, one is still left in doubt as to whether the author intended his work for the public-at-large or for the general practitioner. The text appears beyond the intelligent comprehension of the ordinarily educated lay-person, and is hardly scientific and illuminating enough for the up-to-date medical man.—R. B. S.

MODERN SURGERY: GENERAL AND OPERATIVE. By J. Chalmers DaCosta, M.D., Professor of the Principles of Surgery and of Clinical Surgery in the Jefferson Medical College, Philadelphia. Fifth Revised Edition, Enlarged and Reset. Octavo volume of 1283 pages, with 872 illustrations, some in colors. Cloth, $5.50, net; Half-morocco, $6.50, net. W. B. Saunders Company, Philadelphia and London, 1907.

Owing to the well-deserved and continued popularity of this work, the new edition needs no formal introduction to the medical profession. While the text has been mostly re-written, many sections altered or expanded, and much new matter added, the book still retains its reputation of the past as one which presents the fundamental principles and the accepted methods of surgery in a most concise and comprehensive manner, at the same time not producing any great curtailment of the important subjects.

Among the many sections which have been altered, corrected or expanded, reference may be made to the following important ones: hernia, ulcer of the stomach, cancer of the stomach, ulcer of the duodenum, perforation of the bowel in typhoid fever, tetanus, and suture of the divided spinal cord. The important new matter includes G. B. Mower White's treatment of whitlow, scopolamin-morphine anæsthesia, local anæsthesia produced by the injection of

stovain, the identification of different portions of the small intestines by the method of Monks, the short-loop method of gastro-jejunostomy as described by Moynihan, the no-loop method of gastro-jejunostomy devised by the Mayo Brothers, Matas's operation for aneurisms, and the method of treating cases of general peritonitis as advocated by Murphy.

While we appreciate the difficulty of limiting the subject matter in a work of this magnitude in order to keep within the promises of the title page, we nevertheless feel that a fuller description should be given to such an important operation as the one introduced by Matas for the suture of aneurisms, an operation which has certainly marked a notable advance in surgery.

We wish to congratulate the author in presenting to the profession a work of so great value, especially to the student and general practitioner; and we are especially indebted to him for his efforts in keeping the text up-to-date.—R. B. S.

THE TREATMENT OF DISEASE: A MANUAL OF PRACTICAL MEDICINE. By Reynold Webb Wilcox, M.A., M.D., LL.D., Professor of Medicine of New York Post-graduate Medical School. Pages 900. P. Blakiston's Son & Co., Philadelphia, 1907.

This volume is a pretty complete practice of medicine, arranged in the fashion customary to text-books with the feature of treatment especially prominent. It is concise, clear, written in a breezy, dominant style, giving all the facts that most physicians have time or inclination to accept or retain. It is delightfully free from historical lucubrations or argumentative wanderings, or inferential deductions. In brief, we get here the "real stuff." Furthermore, under "treatment," we are spared the maunderings so tempting to an author who would be "thorough" and is lured on to "mention" the endless remedies, vaunted loosely and on such diverse grounds, yet not even by himself "accepted."

The table of contents consists of fourteen closely printed pages, each line being a distinct disease process or symptom-complex. A useful feature is an outline of records of cases, showing a clinician how to proceed systematically in studying and recording his cases. Herein is displayed the whole gamut of internal medicine, and the views expressed are those which are current, acceptable, and such as the author knows and believes.—J. M. T.

DISEASES OF THE LUNGS. By Robert H. Babcock, A.M., M.D., Author of "Diseases of the Heart and Arterial System;" until recently Professor of Clinical Medicine, etc., Medical Dept., Illinois State University, Chicago, etc. With 12 Colored Plates and 104 Text Illustrations. Pages 800. D. Appleton and Co., New York and London, 1907.

Already Dr. Babcock has presented a splendid text-book on the heart and circulation, equal in size and thoroughness to this one on the lungs. Those of us who know the author personally and are familiar with his extraordinary versatility, his learning and almost superhuman observation, are prepared to expect of him high-class literary work. On turning the pages of the book before us we are not only not disappointed, but admire the completeness of his researches, as well as the wealth of his clinical illustrations and the wisdom of his conclusions. He has covered the ground of diseases of the bronchi in ten chapters, of the lungs in fourteen, of the pleura in three. Here is a text-book for students, a reference book for clinicians; also excellent chapters—as on the prevention of tuberculosis—to be presented to the attention of laymen. The chapter on bronchial asthma—to select one at random—is peculiarly thorough, clear and helpful. The book cannot fail to be welcomed by a wide circle of readers, not only for its intrinsic worth, but also for its charm of presentation.—J. M. T.

NASAL SINUS SURGERY, WITH OPERATIONS ON THE NOSE AND THROAT. By Beaman Douglass, M.D., Professor of the Diseases of the Nose and Throat in the New York Post-graduate Medical School and Hospital. Illustrated with 67 Full-page Half-tone and Colored Plates, Including nearly 100 Figures. F. A. Davis Company, Philadelphia, 1906.

Little over half of this book is devoted to the surgery of the accessory sinuses. A brief history of each is given, the landmarks for their entrance are discussed, their anatomical relations are pointed out, and the different operations for the cure of sinusitis are enumerated, including their advantages and their disadvantages.

The text also includes various operations on the nose and throat. Under the heading of "External Operations for the Relief of Deformity," the use of paraffin, its preparation, the dangers of its use and its removal from the tissues, are clearly discussed. In considering the operations on the throat, especially laryngotomy and tracheotomy, the author describes the technic of these two in such a clear and concise manner that this section of the book, at least, should prove invaluable to the general practitioner.

The illustrations, a number of which are colored, are numerous; they are unusually distinct, very instructive, and are especially deserving of note.

In this book, which was prompted by the demands of the physicians working under the direction of the author, the writer has presented to the profession a work which is clearly written, extensively illustrated, and which is worthy of the highest recommendation.—R. B. S.

THREE ACRES AND LIBERTY. By Bolton Hall, Assisted by R. F. Powell. Introduction by George T. Powell. Macmillan and Co., New York and London, 1907.

Occasionally interesting books come to us for review, not strictly medical, but well worthy of our consideration. The clearly discernible movement of well-to-do city folk back to the country is most desirable. This little book makes plain the possibility of a man of moderate means buying a small, unimproved tract of land within easy access of a city, living on it, improving it little by little, and later selling off half and leaving the remainder fully paid off; perhaps finally selling the half of what he has kept and making a handsome profit. All the while he and his family will have been gaining health and strength, and a knowledge of practical utilities, handicraftmanship, and observation which will prove of value in any walk in life. The book further gives an interesting presentation of the work done in cultivating vacant lots, small-yard gardening, etc. It is preëminently a book which the physician may well recommend to his patients, especially those who are not as vigorous as they should be, as a means of recuperation as well as profit.

MEDICAL DIAGNOSIS. A Manual of Clinical Methods for Practitioners and Students. Fifth Edition, Greatly Enlarged and Revised to Date. By J. J. Graham Brown, M.D., F.R.C.P.E., F.R.S.E., Assistant Physician, Royal Infirmary of Edinburgh; and W. T. Ritchie, M.D., F.R.C.P.E., F.R.S.E., Clinical Assistant Pathologist, Royal Infirmary of Edinburgh. With 200 Illustrations and 8 Full-page Plates. Imperial Publishing Company, New York, 1907.

The popularity of this manual of clinical methods among practitioners and students has induced the authors to issue the fifth edition. In the attempt to thoroughly revise this work and to bring the new edition up to date, the book has been greatly enlarged. The text is concise, clearly written, and appears most complete for a manual, although not exhaustive.

The 200 illustrations and 8 full-page plates, while not of the best, are quite good, and add much to the understanding of the various subjects.

In this new revision of such a helpful manual, we regret to note the absence, or even mention, of so well known and convenient instruments as the Dare's hæmaglobinometer and Stanton's sphygmomanometer. Also the absence of any reference whatever to the Wright and Gabbett stains.—R. B. S.

PARAFFIN IN SURGERY. A Critical and Clinical Study. By Wm. H. Luckett, M.D., Attending Surgeon, Harlem Hospital, Surgeon to the Mt. Sinai Hospital Dispensary of New York; and Frank I. Horne, M.D., formerly Assistant Surgeon, Mt. Sinai Hospital Dispensary. 12mo.; 38 Illustrations; 118 Pages. Cloth, $2.00. Surgery Publishing Co., 92 William Street, New York City.

In this monograph of 118 pages the authors have made an effort to analyze and compare the literature on this subject, and also to determine, by their own experiments, some of the disputed points.

In the early pages of this book the discussion of the work and the ultimate results of a considerable number of investigators impresses the reader with the fact that this branch of surgery is still in its infancy. Good results are claimed by some able men, while others of equal standing denounce the procedure in the same character of cases, and cite their failures. Nevertheless the encouraging results obtained by the careful experiments of the authors are sufficient to lead one to believe that the injection of paraffin or a like substance into tissues will yet play an important part in the treatment of certain deformities.

The book also presents the indications for the injection of paraffin, the chemistry of this substance, and its early and ultimate disposition in the tissues. The technic and instrumentarium are also considered, and a brief discussion given to the causes of failure and absence of satisfactory results.

Since the references to the important articles written on this subject are rather numerous, this small work should prove of decided interest, if not help, to those who are commencing investigations along these lines.—R. B. S.

THE NATIONAL STANDARD DISPENSATORY. Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines. Including Those Recognized in the Pharmacopœias of the United States, Great Britain, and Germany. With Numerous References to Other Pharmacopœias. In Accordance with the Eighth Decennial Revision of the United States Pharmacopœia as amended to 1907. By Hobart Amory Hare, B.Sc., M.D.; Charles Caspari, Jr., Ph.G., Pharm. D., and Henry H. Rusby, M.D. Royal 8vo. Volume of 1860 Pages. Illustrated. Lea Brothers and Co., Philadelphia, Publishers. Cloth, $7.25; sheep, $8.00.

The general treatment of subjects in this encyclopædic work is on analytical lines. It bodies many improvements over that classic volume, the United States Dispensatory. In

the Standard Dispensatory we notice that the Italian and Spanish synonyms of drugs and preparations are given, in addition to the British, French, and German. The cosmopolitan nature of our population has long demanded it. Beautiful, clear-cut illustrations of typical specimens of drugs, as they appear in commerce, by the skilful botanical artist, Mrs. Beutenmüller, are furnished throughout the text without stint. Chemical and mechanical apparatus are fully described and illustrated. The tests for poisons are complete as to methods, technic, and illustration.

Under the description of each metal is found that of the unofficial and newer salts and combinations in the main body of the work, thus facilitating easy reference. Those specially interested in oils will find an exhaustive table of volatile oils, prepared by Dr. Edward Kremers, arranged according to the botanical classification of the plants from which they are obtained, which method reveals their genetic relationship; this table includes the derivation, specific gravity, angle of rotation, constituents, and explanatory remarks.

The assay-tests are fully described and illustrated when necessary. In the appendix we note, in addition to the usual tables, saturation tables for acids and alkalies, quantity of alkalies and acids in corresponding salts, etc.

In the line of progress we must recognize the valuable chapters on physiological testing and the articles on vaccine, and the various sera by Dr. E. M. Houghton.

Although this book is primarily intended as a working volume for the pharmacist, the general physician will find it invaluable as a book of reference.—C. S. W.

RETINOSCOPY (OR SHADOW TEST). By James Thorington, A.M., M.D., Professor of Diseases of the Eye, Philadelphia Polyclinic. Fifth Edition. 54 Illustrations, 10 of which are Colored. P. Blakiston's Son & Co., Philadelphia, 1906.

Perhaps no one who has been writing upon the subject of refraction during the last decade has met with such general approval as has Dr. Thorington. This is well attested by the number of editions through which his books have run. His clear, unpretentious style in expressing himself upon an extremely technical subject is a commendable feature. The fifth edition of his Retinoscopy represents what was best in the former editions, together with such improvements and additions as must occur to an author constantly engaged in teaching this subject and watchful for whatever will best facilitate the efforts of his students in acquiring the theory and technic of this most valuable of all the objective methods of refraction.

Of the many methods which have been advocated during the evolution of retinscopy, the student will find here that which time and practical application have shown to be most easily acquired and productive of the most accurate results. Chief among these features are the distance of one meter, the character of the reflecting mirror, the iris-diaphragm chimney, the small point of illumination, the relation of the mirror to the light, and the phenomena to be observed.

In the reviewer's estimation the student would be relieved of much confusion in determining the resultant formula, and the beginner's results would be more accurate if the spherocylinder method were employed in cases where astigmatism is present. When the difference between the two meridians amounts to two diopters or more the confusion produced by the widely unfocused rays, in the axis opposite to that being studied, obscures to some extent the retinal reflex and renders accurate results, if not impossible, at least only possible to the most trained expert.

It is to the interest of advancement in methods of refraction that Dr. Thorington's book should be in the hands of every ophthalmologist.—C. W. Le F.

Books and Monographs Received

The editor begs to acknowledge with thanks the receipt of the following books and monographs:—

"The Cure of Consumption with Subcutaneous Injections of Oils." By Thomas Bassett Keyes, Chicago, Ill.——"Memoir of Dr. William S. Forbes." By Frederick P. Henry, Philadelphia. 1907.——"The Accessory Sinuses of the Nose from an Ophthalmological Standpoint." By William Campbell Posey, Philadelphia. 1907.——"A Second Case of Keratitis Disciformis; Report of a Case of Corneal Erosion." By William Campbell Posey, Philadelphia. 1906. ——"Collargolum." By I. L. Van Zandt, Fort Worth, Texas. 1907.——"The Milk Problem." By Henry G. Piffard, New York. 1907.——"Some New High Frequency Devices." By Henry G. Piffard, New York. 1907.——"The Borderland of Insanity in Its Clinical Aspects." By John Punton, Kansas City, Mo. 1907.——"Obstetrics." By E. S. McKee, Cincinnati, Ohio. 1907.——"The Treatment of Coryza." By E. S. McKee, Cincinnati, Ohio. 1907.——"The Atypical Child; Its Instincts and Moral Status." By Waldemar Heinrich Groszmann, Plainfield, N. J. 1907.——"Clinical Physiopathology. The Need of a New Classification of Dis-

eases of the Nervous System." By L. Harrison Mettler, Chicago, Ill. 1907.——"The Treatment of Cystitis." By John S. Perekhan, Chicago, Ill. 1906.——"Amputation of the Thigh under Hyoscine-morphine-cactin Anæsthesia." By Henry G. Ebert. 1907.

The following were received from the United States Department of Agriculture, Washington, D. C.: "The Danger from Tubercle Bacilli in the Environment of Tuberculous Cattle." By E. C. Schroeder and W. E. Cotton. 1907.——"Directions for Making the Camembert Type of Cheese." By Theodore W. Issajeff. 1907.——"A Profitable Tenant Dairy Farm." By Lyman Carrier. 1907.——"Comparative Value of Whole Cotton Seed and Cotton-seed Meal in Fertilizing Cotton." By E. B. Boykin, 1907.——"Hops in Principal Countries: Their Supply, Foreign Trade and Consumption, with Statistics of Beer Brewing." By Eugene Merritt. 1907.——"Beans." By L. C. Corbett. 1907.——"Celery." By W. R. Beattie. 1907.——"The Periodical Cicada in 1907." By C. L. Marlatt. 1907.——"Methods of Eradicating Cattle Ticks." By Louis A. Klein. 1907.——"The Cotton Boll-worm." By F. C. Bishop and C. R. Jones. 1907.——"The Terrapin Scale." By J. G. Sanders. 1907.——"Spraying for Apple Diseases and the Codling Moth in the Ozarks." By W. M. Scott and A. L. Quaintance. 1907.——"The Corn Leaf-aphis and Corn Root-aphis." By F. M. Webster. 1907.——"Insect and Fungous Enemies of the Grape East of the Rocky Mountains." By A. L. Quaintance and C. L. Shear. 1907.——"Quantity and Character of Creosote in Well-preserved Timbers." By Gellert Alleman. 1907.——"The Control of Forest Fires at McCloud, California." By A. W. Cooper and P. D. Kelleter. 1907.——"The Timber Supply of the United States." By R. S. Kellogg. 1907.

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THE MONTHLY CYCLOPÆDIA
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Publisher's Announcement

THE SECOND VOLUME OF INTERNAL SECRETIONS.

THE second volume of Dr. Sajous's great work, "The Internal Secretions and the Principles of Medicine," introduces an entirely new conception of the pathogenesis and treatment of disease. The functional importance of the ductless glands: the adrenals, the thyroid gland, the pituitary body, and the leucocytes, has not only been found by the author to exceed that suggested by him in the first volume, but to underlie directly or indirectly all medical questions. The author points out that the absence of these organs in all investigations bearing upon pathogenesis and treatment of disease, accounts for the confusion which has finally led to the prevailing pessimism as to the value of remedies in disease; and that with the ductless glands as factors of all morbid and curative processes, the picture is changed: a disease becomes a clearly defined entity, each symptom of which is traceable to its source, and the treatment of which becomes a clearly defined procedure dictated by logical reasoning. It is medicine freed of the shackles of empiricism, a medicine worthy of a great profession's noblest aspirations.

It is with pleasure that the publishers are able to announce that as the result of an arrangement with Dr. Sajous—who is at present taking a well-merited rest in Europe—THE MONTHLY CYCLOPÆDIA OF PRACTICAL MEDICINE will be the organ through which all the results of his investigations bearing directly upon the practical branches of medicine will reach the American profession. As the two volumes of Internal Secretions will naturally form the foundation of the serial articles which Dr. Sajous will begin in this journal at an early date, the distribution of the second volume will be proceeded with as rapidly as possible.

Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

ON PYROLIGNEOUS ACID AND ITS INTERNAL USE IN ARTHRITIS DEFORMANS.[1]

By LOUIS KOLIPINSKI, M.D.

WASHINGTON, D.C.

Member of the American Therapeutic Society.

PYROLIGNEOUS acid, pyroligneous vinegar, wood-vinegar, is one of the forgotten drugs. In the first half of the last century it was recommended by surgical and medical writers in Europe and in America. An unsuccessful attempt was made to advertise its preservative properties as a nostrum. It was received into the French Codex and into the German Pharmacopœia. Enormously made use of in chemical industry, in medicine its first exhibitions have neither become well known nor extended. In works on the materia medica it is declared obsolete; in treatises on toxicology it is not mentioned at all. The writer proposes to describe this substance and to record his practical experience with it in medicine, both adverse and favorable.

From the dry distillation of wood are produced gases, oils (tar), and a watery liquid (R. von Wagner, Handbuch der Chemisch. Technologie).

The gases are acetylen, æthylen, trityl, ditetryl, benzol, toluol, xylol, naphthalin, carbon monoxide, carbon dioxide, marsh-gas, CH_4, hydrogen. The oily, tarry liquid contains benzol, toluol, styrolen, naphthalin, reten, paraffin, phenols, guaiacols, empyreumatic resin.

These bodies are partly dissolved in the watery liquid—the wood-vinegar—of which the complete analysis is the following (Stohmann & Kerl, Encycl. Handwoerterbuch der Technischen Chemie; Musspratt's Chemistry): Acetic acid, formic, propionic, butyric, valerianic, capronic, crotonic, isocrotonic, angelic, pyromucic, methylalcohol, allylalcohol, furfurol, methylfurfurol, acetone, methyl and æthyl ketone, dimethylacetal, methylacetate, valerolacton, pyrocatechin, pyroxanthin, eblonin, ammonia, methylamin, dimethylamin, trimethylamin.

Also to be found in tar are toluol, xylol, cumol, cymol, reten, chrysen, paraffin, creosote, eupion, picamar, aceton, pittakall, kapnomar, cedriret.

[1]Read at the Annual Meeting of the American Therapeutic Society, Washington D.C., May 4-7, 1907.

The creosote consists of phenol, parakresol, metaxylenol (phlorol), guaiacol, kreosol, dimethylæther of pyrogallol, dimethylæther of methylpyrogallol. The cedriret of Reichenbach is from the oxidation of dimethylæther of pyrogallol; Lieberman calls it cœrulignon, a chinon.

This very complex liquid in its crude state has the following industrial uses: for conserving meat; preventing the decay of wood, rope-cable, and the like; the making of iron and aluminum acetates for cloth-dyeing; for making concentrated acetic acid, methylacohol. anilin from nitrobenzol, lead acetate, vinegar essence (which with ten volumes of water is table vinegar).

The greater number of these components are poisonous, in small or large quantities, rapidly acting or slow. Those of intense action are pyrocatechin (orthodioxylbenzol); methylamin (one of the cadaver-poisons of Selmi); dimethylamin; trimethylamin, vomiting and purging; xylol (like carbolic acid); phenol (carbolic acid); parakresol, paralyzes mammal heart; pyrogallol (pyrogallic acid, trihydroxybenzol), causes acute nephritis even from dermatologic use.

Those slower and of larger dose: furfurol (R. Cohn, Arch. f. Exper. Patholog. und Pharmakol., bd. xxxi, 1893); formic acid, toxic nephritis; acetic acid, anæmia; methylalcohol, allylalcohol, paraldehyde, aceton.

In coma diabeticum, R. v. Jaksch (Die Virgiftungen, Nothnagel's Specl. Pathol and Therapie), there is diminished alkalinity of the blood and an anomalous decomposition of the albumin molecule of the organism; appear fatty acids; formic, acetic, butyric, propionic, acetacetic and B oxybutric acid, finally acetone.

The toxicity of pyroligneous acid is patent from the summary of its constituents. Recorded cases of poisoning from it are very rare. Probably many have occurred without identification. The single instance found is that by Bochardt (Allg. Medizin. Annalen, 1827, Leipzig).

A young workman in a wood-vinegar factory was acutely poisoned by inhaling the heated vapor. This occurred twice within six months. The first attack was of asthmatic form. Face bluish-red, oppressed breathing, pulse hard, full, slow; burning and constriction in stomach; abdomen tympanitic; in the limbs, shooting pains and tremor. In the second attack choreiform motions; recovery. Bochardt at first did not know the cause of the sudden severe attacks. He soon identified it by the patient's occupation and by the knowledge that other workmen in the same place had either sickened or were compelled to give up that labor.

Dr. Herman Hager, in his "Commentar zur Pharmacopœia Germanica," describes acetum pyrolignosum crudum and acetum pyrolignosum rectificatum;

a distillate of 8 parts from 10 parts of the former. The crude acid has a specific gravity of 1.015 to 1.030 and contains 5 to 9 per cent. of acetic acid, 6 to 10 per cent. methylalcohol, 1 per cent. phenols and creosote.

It is a clear, dark-brown liquid with an odor and taste, acetic, tarry, and smoky. On keeping, due to oxidation there is a deposit of empyreumatic oil and resin. Sodium carbonate removes the peculiar odor.

The purified acid is not a concentration of the crude, but a removal of oil, resin, and coloring. Its antiseptic strength is one-half. Specific gravity, 1.006 to 1.010, with 4 to 5 per cent. acetic acid. Its color, like that of the crude, deepens on keeping and exposure to light and air.

It is an excellent antiseptic. The dose of the rectified is 0.6 to 1.8 gm. (10 to 30 drops) in water. The crude acid should be used in medicine, externally alone. Ten to 30 gms., when ingested, cause vomiting, colic, vertigo, palpitation, tremor, and convulsions.

The pyroligneous acid used by the writer was the crude variety. With that all recorded experiments have been made. That the redistilled or purified alone should be administered internally, as declared by Hagar, is a conclusion of a theoretic aspect or else merely a pharmaceutic view of neatness. There is no difference in these liquids, except proportionate strength and the presence in the raw liquid of oily matter and resin. All in all, therapeutically the stronger acid is probably the better.

The most striking property of pyroligneous acid is its antiseptic power. That this was known in ancient times is clear and plain from this paragraph of the "Historia Naturalis" of Plinius Secundus Major, xvi, S. 20:—

"Pix liquida in Europa e teda (Pinus Silvestris Cembra L.) coquetur navalibus muniendis, multosque alios ad usus. Lignum ejus concissum furnis undique igne circumdato fervet. Primus sudor aquæ modo fluit canali; hoc in Syria cedrium vocatur; cui tanta vis est ut in Ægypto corpora hominum defunctorum eo perfusa serventur."

"Tar is cooked in Europe from pine, is used for calking ships and many other purposes. The cut wood, in ovens, surrounded by fire, is heated. The first sweat flows like water from a tube. In Syria this is called cedrium, whose power is so great that in Egypt the bodies of dead men impregnated with it can be preserved."

One of the first medical descriptions is by H. E. L. Ruebner: "De acido pyrolignoso. Dissertatio inauguralis medica," Berolini, 1824. Ruebner narrates what knowledge of its antiseptic powers was had of it in ancient times, and that this was lost until it again appeared in writings of the seventeenth century.

Glauberus, "Miraculum Mundi; Amstelodami," 1653, described its preparation and its uses in the arts. Boerhave praised its antiseptic virtues, comparing it to vinegar. It was called wood-vinegar, acidum lignosum, acidum and acetum pyrolignosum. Its meat-preserving properties are a modern revival.

It colors the skin brown, the discoloration remaining till the cuticle comes off. On animals, lesser doses produce torpor of the whole body, narcosis, vertigo, and convulsions. Larger doses are speedily fatal. Four to ten drops were rapidly fatal to frogs. Sixteen to sixty drops were fatal to fish, pike, perch; to birds—sparrow, snipe, pheasant. From an ounce to an ounce and a half was fatal to dogs. A cat recovered after receiving, per anum, six fluid drams. Likewise the same amount injected into the jugular vein of a horse gave no reaction. He himself took in a day a fluid ounce and a half without harm. Two teaspoonfuls were raw, then a tablespoonful diluted with water. From the injection of ten drams he observed more rapid pulse and an increased flow of urine.

The dose is a teaspoonful; a fluid ounce a day. He recommends it in the following: (1) atonic dyspepsia; (2) gastric fever; (3) nervous fever; (4) rheumatic fever; (5) scarlatina; (6) pemphigus; (7) dropsies; (8) diarrhœa; (9) phthisis pulmonalis. As an anthelmintic. Externally in wounds, ulcers, and fœtor. Its greatest virtue is its antiseptic, either diluted or in a flaxseed-meal poultice. In moist sphacelus, but not in dry; in decubitus; in ulcers, phagedænic, scrofulous, cancerous, and scrobutic; in noma and stomacace; in chronic conjunctivitis; in lepra; in acute and chronic tinea; in fistulous ulcers and in odontalgia.

In the Diction. de Mater. Medical of Merat et De Lens, 1837, it is stated that these different observers commend pyroligneous acid as follows: Pitschaft, of Carlsruhe, and Teuffel, internally in the gastromalachia of infants. C. J. Berres (Ueber die Holzsaeure und ihren Werth, Vienna, 1823), for scurvy, tenia, gangrenous and cancerous ulcers. Klaatsch, of Berlin, aquatic cancer. Schultze, of Kazan, phagedenic ulcers of the foot.

T. Y. Simons. Observations on the use of pyroligneous acid in the treatment of gangrene, ulcers, fungus hæmatodes, and so on. (American Journal Medical Science, vol. v, 1829.)

The use of it original—of two kinds in the shops, one clear with crystals, the other dark and smoky; he used the clear variety, diluted ½ to $^1/_{24}$ with water. Lint wetted with it reapplied two or three times a day. If applied strong, forms a white slough.

Reports several cases of infected wounds apparently needing amputation cured by it. He believed it would be good as a gargle in putrid sore throat.

Used it without result in the black vomit of yellow fever. He thought it worthy of trial in cancer. Simons concluded by writing that he has a conscientious conviction that a proper use of pyroligneous acid will be the cause of saving to many human beings limbs which otherwise would be cut off.

This remarkable article, however, cannot be accepted as descriptive of the action of wood-vinegar. Simons did not use the "dark and smoky" fluid, but a clear one with crystals, which caused a white slough unless diluted. Therefore the conjecture is manifest that it was a fluid containing strong acetic acid. This is the opinion of Prof. H. E. Kalusowski, of the National College of Pharmacy. Pyroligneous acid is given as a synonym of stronger impure acetic acid in the London Dispensatory of A. T. Thomson, 1831.

John Evans (Northwest Med. and Surg. Jour., vol. viii, 1851-2) recommended it as a gargle, a teaspoonful to a wine-glass of water frequently, in sore throat from exposure, in chronic inflammation with and without ulceration, in habitual tonsillitis, in sore throat of scarlatina. Its use, he said, is safe and not unpleasant.

The taste of pyroligneous acid is that of vinegar and an after-taste of tar. It has no caustic or irritating local action. The odor is tarry or empyreumatic. In fact, for the most material of reasons it has the smell of the modern smoked ham. In Western commerce it has acquired the technical name of *liquid smoke*.

It has a clear, dark-red color; on keeping, it becomes black and deposits a thin, adhesive, black sediment. The dose is one to two teaspoonfuls in half a glass or more of water, three times a day. Sooner or later it causes aversion to its odor and taste, or dyspeptic flatulence. It should then be discontinued for a few days or the dose reduced in quantity. Pyroligneous acid has poisonous properties; in fact, they may be lethal. Its action is similar to those of its more toxic components.

Those who have taken it some time lose four or five pounds of their weight; the complexion becomes pale; the appetite lessens. There may occur oppression of stomach or chest; dizziness, palpitation of the heart.

The larger dose given is safe for individuals in general, young or old. It may be toxic in those having any weakness of the heart-muscle or defects of the valves. In all cases of cardiac insufficiency and in all cases of evident valvular or cardiac impairment, either in sounds or in action, in all cases of fatty or other form of cardiac degeneration the dose of one teaspoonful should not be exceeded. Two teaspoonfuls or more in all such may develop sudden, serious symptoms of noncompensation. Dyspnœa, fainting, coldness, collapse, later dropsical œdema, may result. It is therefore plain that a very large dose can be fatal.

Case.—A woman of 61 years. At twenty-two, during the seventh month of her first pregnancy, was delivered of a dead child, she previously having all of the symptoms of the nephritis of pregnancy short of convulsions. A violent attack of pulmonary œdema threatened her life for a few hours. At forty, having become the mother of five children, with no further illness on her part, had a second attack of pulmonary œdema, abating in two days. The patient had slight left-sided paralysis from cerebral apoplexy or embolus at fifty-nine, with no present remains thereof. When examined was found to be dyspnœic on exertion. Heart-beats irregular; mitral and aortic murmurs softened; moderate arterial sclerosis. Pains and stiffness of arthritis deformans. The knee-joints most markedly affected, flexion impossible. In the shoulder-joints much crepitus; cannot raise the arms to a right angle. Took two teaspoonfuls of the acid for a week. Most decided betterment of the joint disease; no pain or stiffness; can walk with ease and raise the arms above her head.

Began to complain of flatulence, shortness of breath, restless, sleepless nights; substernal distress. The medicine discontinued.

Acute cardiac insufficiency appeared. Cardiac asthma; inability to be in bed. Manner restless and much mental agitation, hysterical and fearful; œdema of legs is evident. Is cured with infusion of digitalis and caffein. Rest in bed for two weeks necessary.

Case.—A stout woman of 64. Mild arthritis deformans for about five years; polyarticular variety. Disease not active or acute, but interferes with exercise, from stiffness. Has had attacks of spasmodic asthma and asthmatic bronchitis from catching cold. For some years dyspnœic on exertion, mild vertigo, sensations of faintness, and occasionally is forgetful of words, and has transient lapses of memory. Heart-sounds and heart-action faint; fatty heart is assumed. Was given the acid in full doses, with very marked improvement in the condition of her joints. No further discomfort from pain or rigidity. The breathing at the end of a week became dyspnœic at night, with a sensation of fainting. During the day the respiratory oppression was not so pronounced, but grew so intense after a short walk that she was cyanotic and spoke in gasps. With this her manner was calm and she did not evidence any feeling of suffocation. The acid was discontinued; strychnia, strophanthus, and digitalis substituted. By the use of these remedies, conjoined with rest, she was promptly relieved.

On the other hand, tablespoonful doses have been given, without any deleterious action, to those of an intact circulating apparatus.

Writing from the knowledge of personal clinical experience, the following successful and unsuccessful uses have been made of it:—

In bed-sore it is an excellent remedy. It should be brushed over the affected surface and its borders once a day. A dry compress or pad may then be applied where pressure continued. In typhoid fevers, in the third stage of locomotor ataxia, in chronic septic disease like advanced tuberculosis, it both prevents the development of decubitus and heals the ulcers with rapidity. It acts as a nontoxic antiseptic and desiccant, and destroys the offensive odor which may prevail.

In pulmonary tuberculosis when given for a long time, no beneficial actions were observed. It did not influence the appetite or digestive powers. It did not affect the cough or expectoration, the fever, the chills, or the sweats. It did not influence rest or sleep. It seemed devoid of any action, good or bad.

In gout and in articular rheumatism, acute and subacute, there was no yielding. The rheumatic joint inflammation seemed to be made worse by it.

In the dyspepsias its effects were negative.

In epilepsy its action was not amply established. In one case the result was good. A man of forty, with tertiary syphilis and chronic lead-poisoning following an attack of colica pictonum, did not have a fit for four months, in which time this acid was given him in full doses. For several years he had from four to six convulsions a month, and once or twice a year outbursts of status epilepticus. Potassium iodide had been of no avail. The patient did not remain under continued observation.

The pyroligneous acid was used most extensively in arthritis deformans.

The writer has described another treatment for this disease (Transactions of the American Therapeutic Soc., 1904), in which arsenic was commended as the drug of most value. This treatment gave satisfactory results and in some cases accomplished a cure of permanency. Much time and patience may be necessary. Some discontinue treatment from slowness of relief; others, helpless in locomotion, give themselves up as incurable. A surer, quicker relief of pain and stiffness is therefore desirable. Pyroligneous acid gives this and more. Good results appear rapidly. The pain, both active and passive, abates. The redness of the affected joints disappears. The swelling diminishes in a pronounced degree. The rigidity of the joints and tendons is relieved. The mobility more or less returns. The fibrous ankylosis relaxes or can be broken up. The completeness of the disappearance of pathologic alterations, loss of function, pain, intumescence, crepitus, total fixation depends entirely on the profundity of disorganization and length of time of the destructive process. Wherever the lesions are not hopelessly impressed they can be made to disappear; the joint resumes its normal function.

In arthritis deformans, whenever a stiffened joint is manipulated, long after the primary inflammatory or congestive stage of the disease, much pain is felt by the subject; tenderness, heat, and swelling appear, the member is as helpless as before.

It is a peculiarity of the use of pyroligneous acid that such a joint can be forcibly moved, fibrous tearing be felt but the patient makes but little complaint of pain, the reactionary hyperæmia does not appear or is slight and evanescent. This seems to be positive evidence of its utility. Arsenic produces no such immunity, or but very slowly.

This restoration of function is most exquisitely shown in the use of the hand and fingers. The clawlike posture of the member, the extended position in which it is held, the constant direction of the eye towards it to protect it from touch or contact, are no longer seen. Flexion and extension return; the hand resumes its duties. The patient ceases to complain, unless it continue from force of habit.

Case.—A single female of 53; menopause seven years ago. Arthritis deformans for two years. Health and constitution robust; has worked many years in a book-bindery.

Herberden's nodes pronounced, could not more than half flex fingers. In kneeling or arising therefrom, pain and stiffness. Disease marked in knees, fingers and right hip-joint. The diminished use of the hip caused, at times, slight limp and a stop in walking.

Took two-teaspoonful doses for three months. Then discontinued the medicine of her own accord because of the nausea resulting from its odor and taste. Examination showed disappearance of Herberden's nodes; normal motions of fingers and knee-joints; hip-joint likewise restored in function.

Case.—A widow, 63 years of age, physique delicate, and many years of good health, developed a chronic bronchitis, the sequence of epidemic influenza. At the same time and suddenly appeared an arthritis deformans, in hands, knees, shoulders, vertebral column, and sacro-iliac joints. She became much emaciated and had a continued low fever for some months. An acute, dry, left-sided pleurisy increased her suffering. She was able to sit up, walk with a great effort, but not able to dress or undress herself. With the approach of spring her condition, except that of the joint disease, slowly improved. During the summer the arthritis did not improve, and on the return of winter remained stationary. She was, all in all, helpless in the care of herself. Took the pyroligneous acid in two-teaspoonful doses for six months. A new influenza infection did but transient harm. The arthritis was arrested and began to disappear. At the end of the time mentioned, on

examination is found that she can walk without discomfort; is able to be out of doors. Has complete use of the upper extremities; the fingers, which were stiffened, can now be completely flexed, passively, with but little pain. She is able daily to assist in household work.

Case.—A widow, 70 years of age, weight 98 pounds. Many years of good health, but physique always frail. Two years ago had a mild arthritis deformans, polyarticular variety; cured in two months with small doses of arsenic. Following an influenza infection, the disease reappeared on the right side, hand, shoulder, and knee-joint. Chief symptoms, pain and stiffness. Pyroligneous acid in minor dose gave immediate relief and a prompt cure.

Case.—A married woman of 65 years had arthritis deformans for thirteen years. When examined, was unable to go out or attend to any household work. Disease had affected knee-joints, and vertebral column, fingers stiff, clawlike, the phalangeal ends much swollen and red, the gnarled hands of an old laborer.

Took pyroligneous acid in two-teaspoonful doses for six months. Examination at the end of that time showed normal mobility in knee-joints and vertebral column. The nodes in the fingers almost gone. Is able to do her own housework. Flexion of the fingers completely restored. There is no pain and no stiffness in any joint.

Case.—Married woman of 33. Seven years ago, two months after the birth of her only child, was seized with acute onset of arthritis deformans in shoulders and knees. Was in bed six months. Then able to limp about with approach of spring. The succeeding winter again helpless. With the returning spring, she was on crutches and in the summer walked unaided. She resumed crutches in the fall, and all the winter was bed-ridden. Absolute rigidity of elbows, knees, and wrists set in. She became greatly emaciated.

She was treated at first for inflammatory rheumatism, then for many months no treatment at all. Because of her weak and wasted condition she was given the arsenic-dietetic treatment. The drug was used hypodermically, once or twice a week. She was much improved thereby in health and appearance. The immobility of the ankylosed joints showed no decided betterment. The treatment, especially that by exercise, began to languish. Omitting all treatment she began to decline; the morbid process of the arthritis made no further advance, but had left her helpless. She was given pyroligneous acid, first in full doses, then in lesser; at times she suspended the taking of it. Promptly favorable effects were observed, disappearance of pain and tenderness; returning mobility of the completely stiffened joints, greater strength and animation. With the help of crutches, she walks fairly well. The joints

can be forcibly manipulated. Synovial and tendinous tearing and yielding can be felt; she can submit to this with little suffering; there is no reactionary swelling and redness.

Case.—A woman 74 years of age, active and well-preserved: had the arthritic disease in right shoulder for several years. Constant pain and stiffness, unable to raise the arm. Same process manifest in knees, but not active. Shoulder lesion probably result of years of housework. Was treated with arsenic, but results not rapid. Was given the pyroligneous acid in full doses —immediate relief. Examination of the joint after four months showed normal function and mobility.

From the preceding it is thought that pyroligneous acid deserves a place in therapeutics. Its ancient history, the early knowledge of its great preservative power of animal tissue; its revival; its use as a meat-conserver; the favorable descriptions of it in modern medicine; its European pharmacopœial recognition; its toxicology too little known—all these are claims for recognition.

It was a great and unappreciated forerunner, a lost guide to the might of antiseptic surgery. Wonderful would have progress been in the cure of wounds had its solitary users used it more, its commenders been heeded and imitated.

Gangrene it was known might yield to it; no one thought that by its previous application gangrene and any other form or result of inflammation might be prevented.

In clinical medicine its usefulness has been hinted at; its full potencies are yet to be tried and observed. May it yield better, clearer, and more positive results to the clinician than it offered the unobserving surgeon.

A RÉSUMÉ OF THE USE OF THE DIPHTHERIA ANTITOXIN IN THE TREATMENT OF THE VARIOUS FORMS OF DIPHTHERIA, ESPECIALLY THE LARYNGEAL, WITH OR WITHOUT THE OPERATION OF INTUBATION.

By EDWIN ROSENTHAL, M.D.

PHILADELPHIA.

Pediatrist to the Mount Sinai Hospital, etc.

A RECENT and graphic case of diphtheria, demonstrating so conclusively how and who may become infected, and the still very large mortality records occurring daily, may be taken as a sufficient reason to again call the attention of the clinician to a pertinent query: "Is the discovery of the bacteriologists, especially the one that has presented the antitoxin, to remain a conspicuous

factor in the treatment and prophylaxis of this disease, or are we permitting ourselves to allow the antitoxin to drift into the speculative class again, or to become neglected, or even entirely discarded?"

To begin with, I am safe in assuming that all the promises made by Behring, Roux, Yersin, Aronson, Ehrlich, Bokay, Baginsky, and others have remained undisturbed. And even, if so, if the clinician had not forgotten the fundamental rules as laid down at the very beginning of this method of treatment, a high mortality record in this disease should have become a thing of the past.

To those who have made the study of this disease a personal one, a truth is always presented: either the clinician neglects to make a diagnosis of this disease early enough to use the antitoxin rationally, or the method of using the serum has been forgotten or is unknown, or antitoxin is not used by a sufficient number of practitioners to still place diphtheria upon the mortality tables as a most dangerous and frequent disease.

I take it that, had the method as presented only within the period of a decade been truly and honestly applied as its originators desired, a death from diphtheria would be an exception, not, as now, almost a rule, and also an epidemic.

In the same category as the vaccine virus, antitoxin plays a most conspicuous part, and if it were used simply as an immunizer in suspected instances, then, again, would there be little or no occasion for diphtheria to exist.

So firmly am I persuaded of these truths that I am also convinced there must be something radically wrong in the methods of general application of this remedy. In fact, I am becoming more and more convinced that the peculiar, the specific virtue of the antitoxin has been in many instances forgotten; and to the average physician, or to one who has used the remedy only at infrequent intervals, antitoxin may never have been discovered, for all the good it should have done and is now doing.

There is, to my mind, no known remedy that has been brought so favorably and conspicuously to the attention of the layman. Yet in very many instances, indeed, has it been the layman who has directed the use of the serum in a given case. I have seen in sufficient number of instances where the patient or its caretakers were the ones who proposed or who persisted in its use. And an instance like this is, to say the least, a reflection upon the judgment of any medical practitioner. At the present time I have seen an instance that should hold to shame at least five regular practitioners. A child of three and one-half years, and suffering from nasal, faucial, and glandular

diphtheria, was allowed to progress to the fifth day, or until a bacteriologist made a diagnosis, before any rational treatment as regards the diphtheria was begun; and then, when the diagnosis was established, it was the father who returned, bringing with him the antitoxin, with an *order* to have it used. I am sure such instances as this may be abundantly multiplied, or—why should a mortality record exist?

So much for the general neglect of this subject.

The Diagnosis.—I am always of the opinion that a failure to make a proper diagnosis is more due to the laziness or neglect of the attendant, than a lack of knowledge. How many (and their number may reach the hundreds) neglect to examine the patient fully? How many neglect the throat? Hence it is that, in many instances, when the case is recognized, the golden opportunity to cure the patient by the easy method of the antitoxin has vanished, and naturally other means are required.

It is for the very purpose of recalling the method as originally given to us, and to place the method of the antitoxin treatment again on a rational footing, that I present this paper.

It appears to me that with the passage of time, and when one should have a matured experience of this treatment and place it upon certain fixed rules, a last word should have been said and a further discussion should be superfluous. But when one reads in the various medical journals of the very, very many cases treated by this method, and successful, or that method, also successful, all claiming the only and best method of treatment, surely among so many opinions, a true one should be found. As an example in brief: one specialist orders an initial dose of an extraordinarily large quantity, and repeated in a smaller measure; whilst another orders the simple repetition of a given dose. All these may be called "exceptional" cases, but are not good rules to depend upon. As a matter of fact, and after an experience that dates from the very birth of this method of treatment, I am safe in asserting that the rules as given to us by the originators are still the only safe and only reliable rules to go by. In other words, use antitoxin in the way that was directed at its beginning, to wit: begin with the initial dose; the second dose double the first, the third dose double the second dose, and so on. This method I have adhered to throughout the whole period, and I am firmly persuaded that it is the only true method, for this very simple reason: my result has been practically no mortality to record, or perhaps 1 or 2 per cent.; and this, one should remember, takes in every variety, whether it be a laryngeal, requiring intubation, or a nasal, requiring heroic doses of cardiac stimulants, etc.

Antitoxin is the specific for diphtheria, and nothing more. This is an axiom that should not be forgotten. Hence in the use of the serum one should have a distinct knowledge of what he is doing. To use antitoxin after the infection has so permeated the organism that the patient suffers from toxæmia is irrational and foolish. Likewise is there a time when to use the serum. In the early antitoxin days, its originators gave us as a rule to follow the *day* of the disease, and told us plainly enough, if we wish to follow those teachers, that after the fifth day it was useless. Now, then, what do we note? A description of a case *in extremis* and cured, etc.! Or one in which an enormous dose of the serum was used, with a repetition on the tenth day or later. In these cases, as reported in the different medical journals, the cures are noted, the author taking care to describe how it was used, the variety of the infection, etc. Can one for one moment suppose that such instances are true antitoxin cases? Surely common sense should alone prove that when a case is seen as late as the tenth day or so, the patient has alone began the immunization; or, in other words, such a case had become well, not so much by reason of the additional antitoxin given, but because the body had manufactured its own antitoxin. Whilst it is permissible to use the serum in all cases and at all times, it is because we use it in cases of sepsis and the like that are clearly no longer diphtheria, that the serum has fallen into some disrepute, on account of these failures. Better, then, for the future of rational therapeutics, not to use this remedy when the diagnostician sees that the case is no longer amendable to this method. For one can do just as much good with the old plan of treatment, whiskey, strychnia, etc., as with the new, for in the one instance we know what we are doing, and with the antitoxin we think we know.

While I decry the indiscriminate, neglectful method of using the serum, I do not wish to be placed on record as fixing a rule that cannot be bent to suit certain instances. Take it thus: it should be a fixed rule not to use the antitoxin after the fifth day of the infection, or when the patient suffers from toxæmia or septicæmia. If, however, the case be one of a reinfection, or in a laryngeal variety where the infection is slight, or, again, where the patient, though sick five or six days, shows no blood-alteration, as the alabaster complexion, etc., diphtheria antitoxin should always be used.

These are the exceptions. Surely a discerning diagnostician can note the too-late verdict. I would make a rule so broad that all can apply, to wit: as long as the patient has a fair color of the skin, and as long as the glandular elements are distinct, so long can antitoxin be used with benefit. When the glands of the neck are so swollen and enlarged that the contour is completely

altered, then this treatment cannot apply. It is useless, and in septic and toxic conditions it is only an additional substance placed into the circulation, wholly inert to be of any use. Other rational methods will give a better promise of success, such as, to briefly summarize, the use of large doses of strychnia (judiciously administered) with whiskey, the mercurials both locally and per mouth, the salines both per rectum and hypodermically, etc.

Whilst antitoxin is a specific for diphtheria and nothing else, use it for its value. Prophylaxis should always be the rule, and no case can be said to be too mild that does not require it. I have seen cases change so rapidly, from a benign to a malignant form, that one had the impression that it was malignant from its inception. But that a doctor had been treating the case through measles, etc., would prove conclusively, that he had plenty of opportunity to apply this prevention.

For this reason it is always best, and I have invirably followed this rule, both in hospital and private practice, to immunize any one exposed. And it does not matter what the condition of the patient. Even if the one exposed should have a typhoid or a pneumonia, or even a conjunctivitis, or a burn, or scald, antitoxin should be used if exposed. It is a fact, and one that has been abundantly proven, that diphtheria comes as a complication to any or all infections, and no case can be said to be free from the danger. And no case can be said to be free from the danger of this infection unless thoroughly immunized.

Antitoxin *cures* diphtheria. This has been so often proven that it is no longer a debatable question. But many lose sight of this fact: antitoxin does not *cure* its results. Used early enough, antitoxin may so modify the infection that little or no after-effect can be noted. But if one is familiar with the effect of the diphtheritic infection, one notes very many modifications, as well as results. The one that is always called attention to, and indeed without having a certain reason for it, is the many paralysis, as well as the main one, that of the heart. Antitoxin has received its worse reputation from those cases that succumbed to heart-failure—as if the antitoxin was the cause. Indeed, such an impression is in the minds of the laity, that it is the commonest warning, "We fear its action on the heart." And the clinician with very little moral courage, and the fear perhaps this case may so die, does very little to combat such an erroneous opinion. Heart-failure as well as paralysis comes never in cases that are seen early enough to be "remedied" by the antitoxin alone. Hence, why is it not frequently noted?

Again, there are various complications that are clearly the result of the diphtheria, and all the antitoxin in the world can have no effect on these com-

plications. For instance: in the laryngeal variety there is very great danger from the presence of the membrane. Its very presence causes suffocation; and even after the use of the antitoxin, the separation of the membrane from the larynx will ofttimes lead to dangerous, if not fatal, results. Hence, whilst the use of the serum is always indicated in all cases of diphtheritic infection, the natural results of this infection require especial attention. While in the case of the laryngeal variety a tube may be required, the nasal variety will also require the use of local means as an aid to antisepsis, and in the faucial, the administration of suitable remedies, and in the glandular, the application of suitable methods of relief.

Hence it should always be borne in mind: antitoxin cures diphtheria. It has been administered. Now to treat the special variety. If in the choice of suitable methods, and the one in which one is most familiar is always applicable, then it can be said that the treatment of any given case is being rationally done. Here, then, lies the success in the treatment of any or every variety of diphtheria. Each kind is treated distinctly. The infection, diphtheria, in all cases, receives the suitable dosage of the antitoxin, repeated in the correct way. To be more explicit as regards dose: in a laryngeal case requiring intubation, and coming secondary to faucial or nasal diphtheria, the first dose should be 3000 units; second dose, 6000 units; third dose, if necessary (this is most infrequent, and would be exceptional), 12,000 units, etc.

After the antitoxin is given, then calomel in varying doses as required by the urgency of the case, from $^1/_{10}$ of a grain to 5 grains at a dose every hour until an evacuation. Treat the local manifestations as indicated or required: the larynx with an intubation if necessary; the nose with a douche, etc. Watch the heart simply as you would in any grave infection. Give suitable stimulants, food, plenty of air, etc. But, above all things, use the serum correctly, judiciously, and with an understanding of the subject. Your idea is to treat a disease, and not to attempt to overwhelm it, as it were, with a substance that is used only for a certain purpose. Now, then, use this correctly and with the idea of immunization in *all* cases exposed directly or indirectly, and a mortality record for diphtheria will no longer exist.

ON THE FREQUENCY OF ALIMENTARY GLYCOSURIA IN THE CHILDREN OF DIABETIC PERSONS.[1]

By DR. ARNOLD LORAND.

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According to the knowledge of our day diabetes is a disease whose principal symptom consists of the diminished or thoroughly abolished ability to

[1] International Congress of Medicine in Madrid. After a lecture at this Congress.

assimilate carbohydrate food. This dystrophy is not the result of a sudden change in the ordinary metabolism of the sugar, but it has been prepared insidiously by a long hand. It is a well-known fact that it develops itself very often on a hereditary base, and so it will lie near to the supposition that what is present to a higher extent in the diabetic parent might also show itself to a smaller degree in his offspring.

To ascertain this I have given to several children (also grown-up ones) of diabetic parents, a special test-dinner consisting of a large quantity of amylaceous food, together with beef-meat or pork. The urine that has been eliminated between two and four hours after this mixed test-dinner has been examined by Trommer's and also by Nylander's test. In doubtful cases it has also been examined by the phenyl-hydrazin test of Fischer, with the modification of v. Jaksch and by the fermentation test. Before the examination it has been ascertained that no drugs have been taken, as morphine, salicylate of sodium, etc., which could have accounted for a possible glycosuria. As a result it has been found that out of ten cases there were distinct traces of grape-sugar in the urine of eight persons.

This alimentary glycosuria *ex amylo* might be considered pathological, as according to the lately published work of Hirschfeld, normal urine should not contain more than 0.05 per cent. sugar, which can not be found by the ordinary tests (Trommer, Nylander).

It seems, accordingly, that there exists a certain weakness in the offspring of diabetic parents for the elaboration of carbohydrate food. But there are also other symptoms which indicate a diabetic predisposition. There exists in many of them a tendency to obesity. They develop what v. Noorden calls a "diabetogen fat." They have lost the ability to burn thoroughly the sugar in their organism, but they can still deposit it in the form of fat.

The children of diabetic parents show also other peculiarities. In the majority of cases they enter early in the stage of puberty, and they also get gray at an early period of life. They are, as a rule, of a nervous disposition and very often they are possessed of high intellectual capacities. Cutaneous manifestations, eczema, acne vulgaris in large quantities on the face and neck are frequently met with among them.

All these persons are candidates for diabetes. They may become diabetic if they are addicted for a long time to an irrational nourishment consisting of large quantities of sweet and amylaceous food, together with much meat. They should lead rather a frugal life than a luxurious life with rich food, as this latter could increase the morbid tendency. We should recommend them not to absorb great quantities of sweet and amylaceous food, and especially not together with a strong portion of meat.

We shall equally survey their physical education, recommending them not to embrace such callings where they might be exposed to great intellectual strains or psychical emotions (physicians, lawyers, stockbrokers). A good physical training will prove of high value for the future of such children. We will recommend them active sport of all kinds, especially to robust children. As the author has found that in cases of alimentary glycosuria alkaline waters can improve the assimilation of carbohydrates without imposing any restrictive diet, he considers them as a useful preventive or at least a postponing agent against diabetes. They will certainly be more useful in such cases than in those where diabetes has already developed itself with all its vehemence.

The profession has so long been accustomed to consider diabetes as an incurable disease, that it seems to have thoroughly forgotten that there is a prophylaxis not only against tuberculosis, which at present absorbs so much of its attention, but also against diabetes.

Diabetes can the sooner develop if such persons are often exposed to great psychical emotions (grief, sorrow, etc.). Sometimes under the influence of a psychical shock, such persons might at once present the first symptoms of diabetes. Such cases have been published by the author in his book on the treatment of diabetes. Accordingly we must not only survey the diabetic parents, but also their children. We must do our best to prevent the outbreak of diabetes, or at least defer it to a late period, at which the prognosis will also be better. To this purpose we will recommend watchfulness over these children. It has also the advantage to be much more promising and can also easier be carried through.

It is sad to think how many precious lives could have been saved from early death if many of us could have been sooner aware of these preventive possibilities.

THE SAFEGUARDING OF MARRIAGE FROM THE VENEREAL DISEASES.[1]

By EGBERT H. GRANDIN, M.D.

Gynæcologist to the Columbus Hospital, New York.

UNTIL the so-called medical secret is relegated to the ashheap of other superstitions, marriage cannot be safeguarded against the venereal diseases. This secret was born to protect the guilty at the expense of the innocent. Therefore, too, it makes of the physician an accomplice. Let us see how it works. Examples fortify facts. A young man, about to enter the state of matrimony, consults me because he has acquired the clap or the pox. I warn

[1]Read before the Society of Sanitary and Medical Prophylaxis, April 11, 1907.

him against marriage until cured. I tell him of the dangers to health, to life to which he, in all probability, will otherwise subject his wife. Possibly my interests are the keener because I have reared this girl from birth. He declines my advice. The medical secret bars me from telling the parents or the girl herself. I morally condone a crime. The pure girl, in loving faith, must link her destiny with the impure!

A married man comes to me with the infectious lesion of pox. I warn him conscientiously of the danger he is to his wife and others. He may not heed me. Usually he is too much of a moral coward to tell his wife. Because of the medical secret I cannot. The trusting wife must be inoculated by the "fond" husband!

A few days after birth a child develops ophthalmia and loses its sight. I may tell the father why, but I cannot also tell the mother or the nurse, because the guilty knows that I am hidebound by the medical secret. The sin of the father is visited on the innocent child!

Is it a wonder that many medical men wish to be released from this medical secret, the gist of which the Hippocratic oath states to be "my tongue shall be silent as to the secrets which are confided to me"? Although, thereby to repeat, the physician is made *particeps criminis*, he remains such, or becomes recreant to one of his highest prerogatives. The laity, until educated as to the venereal diseases, will not make him break this secret. It is too essential, I am ashamed to say, to the exercise of the carnal side of too many men. The physician must be compelled to break this secret by legal enactment. It is mandatory on him to break it with respect to—let us say whooping-cough—a disease not to be counted as a drop to the ocean when weighed in the balance against the ills man, woman, and unborn child are heir to because of the venereal diseases. I need not burden you with statistical data in proof—this I have repeatedly done elsewhere and at other times. It is a good sign that the laity, through the efforts of this and other societies, is beginning to appreciate the weight of such data. As parents learn, as young men and young women learn something definite about the venereal diseases, public opinion will demand that the physician be freed from this antiquated shackle, and the boards of health—whose powers are well-nigh infinite in face of infectious diseases—will make it mandatory on us to report diseases which Morrow has aptly said do not exist "*officially*." I have read somewhere the statement that it is impossible for health boards to trace the venereal diseases. The same statement to the same extent held true as regards all other infectious diseases, and in recent years to tuberculosis. The fallacy of the statement is apparent, since we know what to-day boards of

health are doing in respect to all officially recognized infectious diseases. A beginning must, sooner or later, be made with the venereal diseases; and even though it took a century to reduce their prevalence to a degree, the game is worth the candle for the sake of the innocent. Certainly, no good can come from a policy of inaction.

Were it known that the medical secret had ceased to exist as related to these diseases, unquestionably at once many would be deterred from acquiring them, in any event from propagating them. It may be said that one effect of legislation would be the driving of the subject to the quack or the prescribing druggist. I would remind you that in this city, at any rate, an incessant and vigilant crusade under other laws is being made against these offenders and is driving them to cover. If we can only enter the wedge along the line I advocate, diseases which have thriven for years because of the seal of secrecy will wither under the lime-light of publicity. Not at once, but ultimately, and in the future woman, in particular, will rise up and call him blessed who, armed with the courage born of conviction, drives this radical wedge home from the office of Health Commissioner. It requires courage of the highest type from the man who does this, but in the world's history a just cause has never failed in securing a leader. Not alone must he fight popular opinion, but opposition exerted from the ranks of the medical profession, so deeply engrafted is this medical secret. But failing other means of mitigating the ravages of the venereal diseases, the Moses will appear perhaps sooner than any of us here expect.

I am told by a veterinarian that in the brute creation the diseased male refrains from contact with his mate. It would thus seems that the highest grade of animal shows the least conscience in matters sexual. And so it is that the views which I hold are minority views, and so I am held as dealing in hyperbole and may by chance be deemed a mere idealist. But the facts I hold—at the disposal of any one—are so cogent, the evidence I can produce is so free from the latest medical term—"brainstorm"—that could I find a Commissioner of Health with the requisite moral courage and mental equipment, I believe that "a little child" might lead him towards the goal which many men may not hanker for, but which must be reached, and will be reached, in order that the innocent may obtain protection. And so, firm in my belief and true to my convictions, I enter this plea for the safeguarding of the marriage bed, assured that, in time, here as ever truth shall prevail and error shall be conquered.

Editorial

THE VALUE OF ROENTGEN DIAGNOSIS.

THE specialist in medicine is both the result and the cause of the increase in medical knowledge. The breadth of scientific knowledge makes special study essential to, first, the comprehension of what has been attained, and later, its proper application and future progress.

The progress attained in the past eleven years in Roentgenology makes special study an essential to the acquirement of that knowledge and technic which will fit the student to acquire clinical experience. It has been too often demonstrated that an x-ray picture can be valueless and misleading as a diagnosis. To be valuable, it must be made and interpreted correctly. This can only be done by an experienced Roentgenologist, and the diagnosis is valuable in proportion to his technical and clinical experience. Such diagnoses, based on special knowledge and experience, should be demanded, and not an x-ray picture, no matter how perfect. Such diagnoses have often been proved to be more accurate and valuable than those obtained by all other methods of diagnosis.

It must be appreciated, as well, that to make such diagnoses special medical, in addition to technical, qualifications are essential. The diagnostician must know what to look for, as well as how to look for it by this method. If the ear were not trained to interpret and the hand did not place the stethoscope in the right position, the instrument would be valueless in assisting the diagnostician.

In determining the value of such a diagnosis the point to be considered is not, was the Roentgen method accurate, but was this method employed accurately and its findings correctly interpreted. The value is dependent upon the proficiency in technic, the medical qualifications, and clinical experience of the diagnostician. The percentage of error in diagnoses by this method is proportionate to these factors. Errors are more frequent the less medical knowledge, technic, and clinical experience the operator possesses.

Past experience has shown that an accurate technic and correct interpretation can only be acquired by special study and clinical experience. These qualifications cannot be expected in the residents, electricians, and attachés of hospitals. They should not be censured or the method of diagnosis blamed for their errors when they are asked to do work for which they are not qualified.

The physician who expects and asks accurate data from them upon which

he attempts to base a diagnosis is alone responsible. The diagnosis is such as he should expect from unqualified and inexperienced assistants. This is equally true of those physicians who take their patients for a diagnosis to physical instrument dealers and hospital x-ray bargain-counters. They expect valuable diagnoses from unqualified and inexperienced operators, and blame the method of diagnosis because they get erroneous readings of x-ray pictures.

Surgeons and physicians, in communications or in debates in learned societies, discuss errors and inaccuracies in a method which they admittedly have had employed by inexperienced and often unqualified assistants. They alone are in error for depending upon data obtained in such a manner, or for accepting or basing a diagnosis upon it. It would be as rational to ask unqualified persons to use an ophthalmoscope and render a diagnosis, and then blame them and condemn all ophthalmoscopic examinations. Errors should be expected from unqualified diagnosticians, and the physician is himself to be blamed for employing them. As an authority has recently said: "The hospital bargain-counter x-ray department is responsible for the majority of the errors in diagnosis and failures in treatment," and he might well have added that the physician is to be blamed for employing these unqualified assistants.

Fortunately, the enlightened and up-to-date physician and the advanced surgeon have appreciated this source of error. They have also come to appreciate the necessity of having a diagnosis rendered by a competent Roentgenologist, and that they are incapable of translating the diagnosis from a most accurately taken x-ray plate unless they have devoted special time to this study and have acquired wide clinical experience.

A diagnosis cannot be made by a machine. Accurate data cannot be secured by this mechanically accurate method without technical and clinical experience. The value of the diagnosis is dependent upon the accuracy of interpretation as well as the quality of the data obtained. Clinical experience is essential in determining how to employ this method. Technical expertness is essential to its valuable employment. Medical and surgical experience are qualifications which render clinical experience more valuable in making accurate diagnoses with this method. A diagnosis, and not a picture, is demanded to render this method a valuable assistant. It cannot be expected that the diagnosis will be valuable, unless medical qualifications, technical expertness, and clinical experience in translating the data are combined. The value of the diagnosis is proportionate to the amount of these elements it contains. Without the necessary medical qualifications it is value-

less and cannot lead to a diagnosis. A Roentgen diagnosis, to be valuable, must be the correct interpretation of data secured by an accurate technic in employing this method.

The value of a Roentgen diagnosis is, therefore, dependent upon the medical qualifications, technical expertness and experience, and clinical experience of the diagnostician in interpreting these diagnoses.

Those who employ unqualified persons to make diagnoses must expect errors and not valuable assistance from this method.

CHARLES LESTER LEONARD.

TREATMENT OF WRITER'S CRAMP.

(Professional Spasm, Occupation Neurosis or "Scrivener's Palsy," Arm-Pains, etc.)

IT has been my good fortune to relieve, promptly and thoroughly, a number of obstinate cases of that disastrous malady, called by a variety of names, the effect of overuse of the hand. It may be helpful to others to record my experiences and describe my methods. To be sure, it is not practicable to make plain how one actually does the work, but in my judgment there is demanded personal skill in employing or directing the manipulations. The research has interested me to seek for the points of damage and to offer rational explanations as to the seat of origin. These neuroses or irritations, sometimes neurites, seem to be due to alterations of nutrition in the segments of the cord in which the cell-bodies lie, and through which the vasomotor innervation proceeds to the affected part. They respond to remedial measures directed chiefly to that point. Constitutional measures are also important. I find nowhere any clear explanation of the pathology of the malady; the nearest approach being the observations of Rosenthal, quoted by Hare, who calls attention to the fact that when the unaffected hand is employed to do the work of the affected one, it also suffers, soon or late, and similarly. This is said to be "due to sympathy or other cause." The experiments of N. A. Randolph were designed to locate the trouble in centers in the brain. It would seem unnecessary to accuse the cerebral motor centers of involvement when the derangement of the subsidiary centers in the cord will suffice. Dana, in describing "brachial neuralgias and arm-pains," ascribes them to irritation or inflammation of the trunks of the brachial plexus and its roots of origin. This irritation does not usually reach the degree of neuritis, not showing paralysis and atrophy, anæsthesia and vasomotor phenomena as a rule. Since these derangements can, and do, disappear entirely, and no lesions are

found in the brain, the whole, or certainly the major trouble, therefore, resides in the centers in the cord. It would appear, then, that clinical findings are capable of affording the explanation. To my mind the pathogenesis is that by excessive use of a part the by-products of fatigue so affect the vasomotor cell-bodies in the cord that a condition of relative exhaustion results; an anæmia or destructive action is induced there which produces a group of symptoms readily explained by the published statements of John P. Arnold (quoted in papers by the author, British Journal, "Diseases of Children," January, 1905; Monthly Cyclopædia of Practical Medicine, "Hypothesis of Scoliosis," vol. viii, p. 303, 1905). How much aberrant gout and other derangements of metabolism are potential factors can only be surmised in the light of our present knowledge. (See article by Woods Hutchinson, Monthly Cyclopædia, February, 1907.)

There will be found, in all cases, evidences of reflex disturbance from the over-use of the hand, in the tissues of the back lying adjacent to the segments of the cord from which the part is innervated. If the condition is recent, the paravertebral tissues will exhibit tendernesses and infiltrations in proportion to the degree of irritation. If, as commonly happens, there is also less or more of neuritis present, this sensory reflex will be greater and more extensive. When the condition is of long standing the paræsthesia is less, or has disappeared, and the infiltrations alone remain. When neuritis is a feature, tenderness can be elicited also along the course of the nerves, especially at certain points familiar to those who habitually search for them. Often there is also relative atrophy.

Among the causative factors which seem to me forceful is a mental attitude which may be described as psychic hypertension, whereby motor rhythm is marred by excess of action. This motor defect, similar to exaggerated expectant attention, impairs the economic output of force; the action is unduly prolonged, hence follows a cramp. Therefore, from the outset, there are present causes for a local exhaustion which acts as a ground for central irritation.

The treatment, then, should include (1) correction of the psychic perversion, not alone in the disordered part, but in the whole mental attitude. Rest is not mere vegetation. Doing nothing, or not repetitions of the special act, is by no means sufficient. There is needed moral orthopædia, education in motor balance; finally, training in the conservative expenditure of voluntary force, from all fountains, psychic as well as physical.

(2) Sedation of the hypertonic erector spinæ muscles. This will be followed by relief of congestion in the segmental centers.

(3) When the acute conditions have passed, there is required stimulation of the centers, by inducing afflux of blood to them, so that they, and their exhausted cell-bodies, shall be supplied with nutrient blood in abundance.

(4) Carefully regulated, distributed pressure needs to be exerted upon the areas of neuritic tender points, to inhibit the excess of sensory impulses passing.

(5) Stroking along the lymph-channels, to remove local stasis.

(6) Stretching, to relieve beginning contractures.

(7) Reëducation in coördination. This involves both psychic and motor training. It is "rather a large order" and will tax the ingenuity and patience of any man.

To take up each one of the above subdivisions and present them understandingly would require several pages. Physicians are proverbially "disinclined to read much," hence the hints will be left in this outline form for the present. They will glance at descriptions of concrete instances, hence one or two will be given.

I am permitted to cite the case of a lady who has for many years enjoyed a reputation for brilliance as an essayist, epigrammatist, story-writer, narrator, and who for five years could not touch her pen. The worst of this disability was that she could not dictate satisfactorily. The wonder is that she was able to preserve her sanity, her charm, her friends, because the exasperation of this state of enforced desuetude would have caused any common mortal to become a peevish pest. Nevertheless (*mirable dictu*), disabled as she was, accepting the fate of a literary derelict, she still was able to preserve a serene front and achieve a secondary fame as a drawing-room delight. The form of her malady was peculiarly painful. Neuritis was present, heaviness, slight atrophy, etc. She could not use her arm to assist in the toilet. She was worse off than one-armed. Any one less than angelic would have become a snarling dowd. However, overmuch praise might make her vain and she knows of my lucubrations and will see them. In about six weeks she became entirely well, and perpetrated a novel in another two months. In an imperative exigency, the exodus of the "disturbing Greeks" of the kitchen on a bitter winter day, I once soon after discovered her radiantly aglow. She told me she had herself raked the furnace like a laboring man, with no damage and much satisfaction, as from an imperative duty well done.

Touching the needed stretchings (No. 6) an instructive incident may be related. About the middle of my treatment this lady was riding in a trolley car and, being compelled to stand, was "holding onto a strap." It was about the time when first able to raise the arm aloft and was enjoyed as an exploit long denied.

A sudden turn of the car and the lurching of a heavy neighbor caused an unexpected and terrific stretching, which produced agonizing pain for which I was summoned. The arm seemed "torn from its socket." Despair followed, as of worse than ground lost, and complete disablement was feared. In three or four days the arm was thirty per cent. better than before. The sudden extreme stretching proved a boon. I admit I would have hesitated to apply the measure, but it saved weeks of treatment.

In the case of another lady suffering from extreme "neuritis" of the arm, I overdid the stretching (according to her point of view) and very nearly was dismissed by her husband. Excellent results, however, followed.

The only way to get satisfactory results is for the physician to do all the work himself, at least until it is permissible to allow a masseuse to take up the later routine or prolonged manipulations. Even then, it is necessary for him to know precisely what shall be done, and above all, what not. It is art superadded to science. The best masseuse in the world is the better for accurate guidance. But the physician must be the real expert. My earlier years, sixteen of them, were spent profitably as the assistant of a great neurologist, and during these much experience was gained in this group of cases. We used galvanism, sinusoidal and other currents much, and with decided benefit. Also we employed the highest obtainable manipulative talent, Swedish, German, and even Hindu and Arabian. The cases at the best often lasted months.

Nowadays I find better results can be obtained by my own hands, with less time or exertion, in a third or fifth of the time.

J. Madison Taylor.

Cyclopædia of Current Literature

ANTITUBERCULOUS SERUM AND THE OPSONIC INDEX.

The influence of Marmorek's antituberculous serum upon the opsonic index of the blood of a number of patients suffering from advanced pulmonary tuberculosis has been studied by the authors. Early cases often improve wonderfully upon fresh air and plentiful feeding alone. From a study of their five cases, they conclude that a series of daily doses of Marmorek's serum will, when administered rectally, usually produce a rise of the tuberculo-opsonic index; this rise begins after the first three or four doses and soon reaches a maximum, close to which the index remains for three or four weeks, while serum is being given, and does not fall until nearly a week after injections have been omitted. This rise in the opsonic index is coincident in some cases with an improvement in the general condition of the patient and a diminution of the diurnal variations of the temperature. Subcutaneous injections of the

serum do not seem to have such good effect. Antidiphtheria serum, given subcutaneously, caused a rise in the tuberculo-opsonic index, but an initial fall was observed. W. C. Bosanquet and R. E. French (British Medical Journal, April 13, 1907).

APPENDICITIS, TRAUMATISM AND.

From personal experience and from a study of the cases found in the literature, the writer does not consider that trauma is ever the direct exciting cause of acute appendicitis in a perfectly normal appendix. He believes that an acute attack of appendicitis can follow a severe blow upon the abdomen or fall upon the abdomen, or be due to muscular contractions of the ileopsoas muscle in an appendix which has been previously inflamed only under the following conditions: (*a*) In a latent or residual abscess or extensive pathological lesion of the appendix, where the appendix does not occupy a deep pelvic position, but is in close proximity to the anterior abdominal wall, severe direct traumatism may precipitate an acute attack. (*b*) Strong contractions of the ileopsoas muscle cannot, in the writer's opinion, be the immediate cause of an acute attack of appendicitis, where the appendix is chronically diseased or where it has extensive pathological lesions, unless it is firmly adherent to and not simply in apposition to the peritoneum overlying this muscle. (*c*) The degree of traumatism to be a factor in the causation of appendicitis must be direct and of considerable force; such force, applied to the right iliac fossa, may tear the underlying parietal peritoneum and so simulate an acute attack of appendicitis that only opening the abdomen and exposing the appendix could definitely settle the matter.

The acute attack of appendicitis of traumatic origin is observed more frequently in males than in females on account of their more active life and greater liability to injuries and strains, and between the ages of ten and twenty-five years. In an appendix previously diseased, the liability to an acute attack of appendicitis supervening upon injury is in direct ratio to the degree of injury, and depends entirely upon the pathological changes present in the appendix at the time of injury.

The author maintains that it is exceedingly rare to find a case of acute appendicitis in which it can be definitely stated that traumatism is the direct exciting factor. This fact is borne out by a review of 1400 cases seen at the German Hospital during the years 1904, 1905, and 1906, as well as the literature on the subject.

The mortality is very high in these cases on account of (a) the failure to recognize the condition until the disease is well advanced; (b) the rapid gangrene and perforation which occur; and (c) the delay in operation. The writer urges a more careful study of this class of cases and, as soon as a diagnosis has been made, insists upon an immediate operation if the best results are to be obtained. J. B. Deaver (New York Medical Journal, June 15, 1907).

BERIBERI.

Beriberi is an acute infectious disease, transmitted by direct infection, probably always through a skin abrasion upon some vulnerable part of the body. The specific organism causing the disease is an exceedingly small bacillus, usually seen in pairs, but not encapsulated, and is found in the cerebrospinal fluid and blood, only during the acute or inflammatory stage of the disease, after which

time it rapidly disappears from these tissues. The favorite habitat is virgin soil, protected from sunlight. It is a slightly facultative anaërobin and not very viable, being speedily killed by exposure to sunlight, as demonstrated by bacteriological test and by clinical experience.

The former classification of the disease as beriberi hydrops and beriberi atrophica, is erroneous. There is but one form of beriberi, which is characterized by three stages: First, the stage of invasion; second, the stage of exudation, beginning in the cord and following by toxic motor and sensory paralysis of varying extent, which in typical cases proceeds to the third, or the stage of compensation, in which the disappearance of the bacilli and the toxic stage results in the rapid (usually) disappearance of the dropsy in cases in which softening and dilatation have not progressed to the degree of permanent loss of compensatory action. The degenerative cord and nerve lesion is long present in all moderately severe cases, resembling the lesion in tabes in this particular, and even though the heart lesion appears to have subsided while the patient is leading the inactive life of a convalescent, the damage to function is permanent. This explains the numerous cases of sudden and unaccountable deaths in patients leaving the hospital apparently cured, as reported by many observers with extensive hospital experience. That a toxin or toxalbumin should be isolated, is the rational conclusion, and that an antitoxin curative in the period of germ activity, and before degenerative change has taken place, is the inevitable reward for properly directed effort. J. M. Wheate (New York Medical Journal, April 6, 1907).

BLOOD-TEST, A NEW.

The writer has simplified the Adler blood-test. An aloin paper and a benzidin paper are prepared. The aloin paper is made by saturating ordinary filter paper with a solution of aloin in 70 per cent. alcohol; the benzidin paper, by moistening filter paper with a saturated solution of benzidin and glacial acetic acid, and drying it. In preparing the paper, as well as in making the test, it is of importance to avoid contact with the fingers, as a drop of perspiration causes a similar reaction. In handling the paper it is best to use an ivory-tipped forceps, or protect the hands by means of a towel. A piece of benzidin paper is immersed in the solution to be examined, and a few drops of hydrogen peroxide are added. The piece of paper is placed on a piece of white porcelain and is examined for the development of a blue color. In the presence of blood a green or blue color arises in a few seconds to a minute.

Regarding the sensitiveness of the reaction, it is greater if more time is allowed for its occurrence. In dilutions of 1 part of blood to 500 parts of water a distinct reaction occurs in between thirty to sixty seconds. In dilutions of 1 to 2000 a trace of blue occurs one to two minutes later. To wait longer for the reaction does not seem advisable, as after thirteen minutes the benzidin paper with hydrogen peroxide alone, without blood, will yield a blue color. For practical purposes it will be best to wait but one minute for the occurrence of the reaction. If after one minute there is no trace of blue, then the test must be considered negative. In examining for blood in stomach contents too great a sensitiveness is not important, but rather a certainty that the test will indicate only blood. The longer the re-

action is waited for, the more substances besides blood may cause it. Benzidin paper can be used for testing for blood in stomach contents, urine, and fæces. Max Einhorn (Medical Record, June 8, 1907).

BUTTERMILK FEEDING.

Twelve cases of babies with infantile atrophy, gastro-enteritis, etc., are reported by the writer, in whom he had generally good results from the use of the following mixture: Buttermilk, 1 quart; wheat flour, $3^1/_2$ teaspoonfuls; granulated sugar, 15 teaspoonfuls. The ingredients were carefully mixed, heated up to the boiling point but not boiled, and then rapidly cooled and kept till used. The cases were not selected as likely to do well, but in every case regular milk mixtures had been tried and failed before the buttermilk was begun. The ages ranged from one to fifteen months; the average gain in weight during the use of buttermilk was eight ounces a week. The author remarks the advantage of cheapness in the buttermilk feeding, and believes it a most excellent food for infants suffering from intestinal indigestion, enteritis, and marasmus. No unpleasant effects were observed from its use, children almost invariably taking it well. A few, when first put on the diet, vomited slightly, but with one exception this ceased in a day or two. The point the writer especially emphasizes is that the success is not so much due to the absence of fat as to the great ease with which the proteid of buttermilk is digested. He has observed this in almost every case. Several of the infants who were unable to digest 0.75 per cent. of calcium casein digested perfectly the 2 or 3 per cent. of casein lactate in the buttermilk. H. C. Carpenter (Journal of the American Medical Association, May 11, 1907).

CARBON DIOXIDE IN THE AIR AS AN ANTIPYRETIC.

Experiments upon normal animals and animals suffering from febrile conditions are reported by the writer, showing that the admixture of certain proportions of carbon dioxide to the air breathed by such feverish animals produced a reduction of temperature. The amounts of carbon dioxide used were either 5 per cent. or 10 per cent. The latter mixture was found to be the more efficient of the two, the temperature of feverish dogs falling to normal after exposure to 10 per cent. carbon dioxide air, and rising again after exposure to air poor in carbon dioxide. These experiments may have a great deal of practical importance in fever therapeutics if the tests are carried out on a larger scale. N. V. Wesselkine (Roussky Vratch, March 7, 1907; New York Medical Journal, May 25, 1907).

CARCINOMA, ENDEMIC OCCURRENCE OF.

The writer concludes that the observations recorded by him suggest that hereditary transmission of certain predisposing conditions from parents to offspring is one of the factors causing the so-called endemic occurrence of cancer among animals. It is shown, experimentally, that various kinds of tumors remain better preserved when inoculated into the animal in which the tumor had developed originally, or into an animal affected with the same kind of tumor, than when inoculated into other animals of the same species. In the latter they become necrotic; in the former they remain alive, or grow. This has been found in three sets of experiments in the rat, mouse, and dog. Further experiments must determine to what extent this rule generally holds good.

No parallelism need exist between

the tendency of tumors to become multiple and their inoculability into other mice. Originally slowly-growing tumors may be easily inoculable. The energy of growth of the original tumor is only one of the factors which determines the degree of inoculability of a tumor. An endemic occurrence of multiple tumors among mice is described. As many as nine tumors may be found under the skin in different parts of the same mouse. The tumors found in the same animal are almost identical. If these tumors represent primary multiple tumors and not metastases, the conclusion is inevitable that many of these tumors are not derived from the mammary glands. Metastases into lymphatic glands could never be found.

In confirmation of Haalands' observation, microscopic metastases can be found in the lung in a certain number of cases when macroscopically no metastases exist. Besides the metastatic nodules, different nodules are occasionally formed in the lung through the proliferation of the alveolar or bronchial epithelium.

An unusual anomaly is described in a mouse affected with a tumor. A structure closly resembling the epidermis was found in the axilla of a female mouse. Other mice sent by a breeder, among whose stock tumors had been found, showed in each case the development of a large cyst in the neck. The possibility of a relationship of these anomalies to the formation of certain tumors in mice must be taken into account. Leo Loeb (University of Pennsylvania Medical Bulletin, March-April, 1907).

CERVICAL ADENITIS.

From a careful study of 300 cases of cervical adenitis, the writer concludes that enlarged glands of the neck are not, primarily, tubercular, and bear the slightest relation, if any, to general or pulmonary tuberculosis. They are due to a mixed infection of pus-producing bacilli, and will quickly resolve if the source of the infection is removed before the glandular tissue becomes disorganized. If disorganization takes place, the gland should be poulticed until it is practically liquefied. It should then be opened by a stab-puncture, emptied, and drained by a "Briggs canula." Cases seen late, with a large mass of partially calcified and partially disorganized glands present, call for a thorough and extensive dissection. Treatment, other than local, should be food, fresh air, and proper clothing. F. D. Donoghue. (Boston Medical and Surgical Journal, March 28, 1907).

DEAFNESS OF LONG STANDING, RELIEF OF.

Clinical experience seems to have confirmed the opinion, according to the writer, that in cases of deafness, long abandoned as hopeless, habitual speaking in an abnormally moderated or low tone of voice, associated with better hearing in a noise or noisy place, is an evidence of an immobilization of the outer portion of the auditory conducting mechanism; and, in such cases, is an indication for the employment of surgical measures for its radical relief. He also states that resection of the auditory conducting mechanism, properly done, will radically relieve deafness—no matter of how long standing, or how treated hitherto—proportionally to the distinctness of the following characteristic symptoms, when found together: Habitual speech in an abnormally moderated or low tone of voice, with better hearing in a noise, or noisy place, which

are pathognomonic of immobilization of the outer portion of the auditory conducting mechanism. R. Barclay (Journal of Missouri State Medical Association, May, 1907).

GALL-STONES AND THEIR SYMPTOMS.

Attention is called to the large number of apparently incorrect diagnoses of gall-stone, in which all classical symptoms seem to be present, and yet, on opening the gall-bladder, no gall-stones are found. An abnormal condition of the gall-bladder inviting infection, causing colic, and in the writer's belief, making the gall-bladder the nidus of future gall-stones are the conditions present.

The author holds that the only error in such cases is in limiting the cause of symptoms to an actual crystalline formation. On the other hand, the absence of gall-stone pain and discomfort in the patient's history must not be given too much weight in eliminating gall-stones from the diagnosis. Gall-stones may exist and may cause serious anatomic lesions with few, if any, symptoms of pain or any of its manifestations. M. H. Richardson (Boston Medical and Surgical Journal, May 30, 1907).

GANGRENE IN ANGINA PECTORIS.

The relation between symmetrical gangrene and angina pectoris is emphasized by the writer. Angina pectoris is, in the main, an angiospastic disease, and it may easily be understood how a spasm of the arteries may extend through the circulatory system. In the case reported, that of a man, aged seventy years, the symptoms of angiospasm in the extremities, such as cyanosis and pain, were replaced by a true gangrene of the upper limbs. The patient had suffered from anginal attacks for two years, during which he had suffered pain and numbness in his right arm and hand. The gangrenous process appeared very rapidly and continued for three months, after which it healed completely, not leaving any traces whatever. It was noted that during the days which followed an attack of angina, the gangrenous areas looked worse, and the secretion had a more disagreeable odor and was more abundant. E. Salvini (La Riforma Medica, March 23, 1907; New York Medical Journal, May 4, 1907.

GOUT, NATURE AND TREATMENT OF.

Gout is regarded by the author as the result of a disturbance in the intermediary metabolism, especially in the metabolism of nuclein, and probably located in the nuclei of the cells. Diabetes, he states, is the result of a disturbance in the metabolism of carbohydrates. Persons who suffer from gout in later life are liable to display certain morbid tendencies in childhood. Such children generally have a healthy aspect, perspire readily, have a good appetite, but with a great tendency to indigestion, eczema, and itching cutaneous affections, take cold easily, and are especially prone to recurring attacks of granular pharyngitis. Migraine is the most constant sign of the gouty tendency in early life; epistaxis in the morning is another sign, as also pains in the joints, dyspepsia and dizziness, signs of neurasthenia, and especially acidity of the urine, with deposits of urates and uric acid. Other signs of the gouty tendency, even in the absence of actual gout, are variability of mood, depression, and a certain disposition to dissimulation. It is important to detect the tendency to gout early and to insist on a simple mode of life, with dieting as for obesity, restriction of carbohy-

drates, with plenty of albumin and fat. He regards vegetable albumin as fully equivalent to animal albumin in the diet. Alcohol should be entirely avoided, as also too much bread, sugar, sweets of all kinds, cake, puddings, and other foods that tend to make fat. W. Ebstein (Deutsche medicinische Wochenschrift, Bd. xxxiii, Nu. 16; Journal American Medical Association, June 8, 1907).

HAY FEVER, ANTRAL SINUSITIS AS A CAUSE OF.

The author advances the theory that catarrhal sinusitis of the antrum of Highmore is an important etiologic factor in the causation of hay fever and some of the commoner forms of catarrhal disease of the nasal tract. The affection does not occur in persons in whom the ostium maxillare is of the normal small size, but in those in whom disease, malformation, or injury has made the antrum opening of sufficient size to admit germs to the interior of the cavity. Under normal conditions the opening is for purposes of ventilation only, and the cavity is sterile, the opening being securely protected by the tissues and hard to reach.

The author has treated 92 cases by washing out and medicating the antrum, and has obtained the best of results in nearly all cases treated. Only one patient was not benefited. Most of the patients were entirely cured in from one to two weeks, and remained so. J. E. Schadle (Medical Record, May 25, 1907).

HEART-FAILURE, ACUTE: TREATMENT.

Acute failure of the heart is brought about by any condition interfering with the emptying of its cavities during systole or the filling of its cavities during diastole. Interference with the heart in its capacity as a force-pump may be brought about in two ways; either by deficiency in its muscular power or by an increased resistance to the output of blood. Deficient power occurs in acute degeneration of the muscular fibers due to some poison, as in diphtheria, typhoid fever, alcoholism, etc. Here the indications are (1) to prevent or diminish the degeneration; (2) to lessen the work of the heart; and (3) to stimulate the heart over short periods when fatal syncope is threatened. The first indication can only be successfully met in the case of diphtheria where diphtheria antitoxin is at hand. In typhoid we have no antitoxin, but by reducing the fever by means of cold baths, heart-failure is prevented. In pneumonia the nerve-centers are probably implicated as well as the heart-muscle fibers. Acute heart-failure may result from alcoholic poisoning, which is a depressant to the cardiac muscular tissue and leads to fatty degeneration.

An increase of the normal resistance to the output of the heart leads to an increase of the work done, and if the heart-muscle is diseased, to heart-failure. Such an increase of work results from excessively high pressure, either in the systemic or pulmonary blood-vessels. Acute Bright's disease is an example of a condition producing high arterial pressure, and mitral stenosis, emphysema, and pneumonia, of conditions causing obstruction in the pulmonary circulation, with consequent failure of the right ventricle. The diastolic filling of the heart may be affected by the diastolic quantum of blood being either too great or too small. Excessive filling of the cardiac cavities may be caused, for instance, by excessive muscular exertion, or by rupture of an aortic valve, with regurgitation and

acute dilatation of the left ventricle. Any condition raising the intrathoracic blood-pressure will diminish the diastolic quantum—the best examples are pericardial effusion and hæmorrhage into the pericardium.

Finally, a diminution in the total amount of blood, as seen in hæmorrhage and vasomotor paralysis occurring in shock, both produce acute heart-failure, owing to the diminished filling of the cavities during diastole, and also through muscular weakness resulting from deficient circulation in the coronary vessels. Shock is due to impairment or breakdown of the vasomotor mechanism. The blood-vessels lose their power to accommodate for changes of position, and stimulation of a sensory nerve causes no vasomotor response.

The indications for treatment are to restore the vasomotor tone or to increase the volume of blood. Strychnine is useless, and the best results are obtained by repeated injections of adrenalin in conjunction with saline infusions. Bandaging the legs and abdomen so as to increase the amount of blood in the larger vessels, is also of service. Rupture of the heart, due to fatty degeneration, acute abscess, etc., always leads to death. Pleural effusion is liable to be accompanied by acute heart-failure, due to a rise in the intrathoracic pressure, and to obstruction of the pulmonary circulation. C. Bolton (Lancet, March 30, 1907).

INSANITY, EARLY DIAGNOSIS OF.

Although some marked phase or violent outbreak on the part of the patient is usually regarded by the friends as the beginning of an insanity, careful inquiry will reveal the fact that in the majority of cases the bursting of the storm has been preceded by a prodromal period lasting for months or years, and during which the importance of the changes in the mental life of the patient has passed unrecognized. Thus, the opportunity of correcting the abnormal mental tendencies or guarding against their consequences is lost. The early diagnosis of insanity is rendered difficult by the fact that there is no abstract difference between the sane and insane mind; that there are no elements found in insanity which are not present in sanity; that there is no sharp dividing line between the two; and that our knowledge of insanity, with one exception, is purely clinical and rests on no substantial basis.

As there is no abstract difference between the sane and the insane mind, the recognition of the latter is most easily made by a study of the former, and the changes in the healthy mechanism which forms the insane state. One must be able to exclude entirely the doctrine that the mind or soul is something apart from the body, and be able to regard the mind as simply the product of cerebral activity. The psychic development of man forms his personality or ego, and depends much on his age, education, station in life, and environment; but not wholly so, for mental peculiarities are inherited just as physical ones, for the reason that the mind is the product of the physical brain. It is the derangement of this wonderful mechanism which constitutes an insanity, for by insanity is meant a disease of the mind, and not a simple loss of the same.

In the prodromal period the picture presented is often one of cerebral weakness, such as is found in ordinary neurasthenia. At first the patient often recognizes his condition, and complains that he does not sleep well; that he is depressed and irritable; that he becomes easily fatigued mentally and is worried

about himself. But soon this recognition of his condition is lost, and one difference is soon apparent which widely separates neurasthenia from an insanity, and that is that the neurasthenic recognizes his true condition, while the insane patient does not. That fact has long been recognized and forms the basis of all our law relating to the questions concerning insanity.

An insanity, from its onset, shows itself by a disturbance of the whole psychic mechanism, although it may be most marked and remain so in certain functions of the mind. While there is nothing found in insanity which is not found in sanity, and while all the changes described can, and do, occur at times to a slight degree in the normal mind, it is their permanency and exaggeration to a point which renders the patient unable to judge as to the nature, quality, and consequences of his acts, and thus unable to adapt himself to his environment, which divides the same from the insane mind. A. C. Brush (Medical Record, March 23, 1907).

LEG ULCERS, CALCIUM IODIDE IN.

The use of calcium iodide is recommended by the writer in the treatment of leg ulcer, and, in his experience, ulcers which have for years stubbornly resisted all kinds of treatment, and whose owners have without avail been simply saturated with potassium iodide, in a week or two showed clean granulating surfaces, and have in almost all cases healed up. In all cases the induration around the ulcers greatly diminished or entirely disappeared. He also observed in a few cases of syphilitic necrosis of the nasal bones considerable benefit from its administration, and great relief was obtained in headaches associated with syphilis. The dose given in all cases was two grains in mixture three times a day, and there did not appear to be any increased advantage from augmenting the dose. Any mild external application seemed equally efficacious; in most cases he used a mild mercurial or iodoform ointment. A. G. Peter (British Medical Journal, April 27, 1907).

MALARIA.

According to the writer, no region should be uninhabitable on account of malaria, and much of the so-called malaria is something else. He asserts that he has seen tuberculosis, sepsis, gall-bladder disease, liver abscess, dysentery, uncinariasis, chronic nephritis, and visceral malignant disease in persons who come to him, all with the same story of "malaria in the system." Nothing is more amenable to proper treatment than malarial fever, he says, and a recent infection is almost never anything but a fever. Malaria in the beginning is an infection by one or more groups of one or more varieties of blood-parasites whose life function in the body is the destruction of hæmoglobin. The segmentation of these parasites starts the well-known symptoms. A resistance is developed and the so-called chronic malaria is, as the writer believes, a state of relative immunity in which repeated infections produce comparatively slight reactions, a state of symbiosis in which the immunizing contest between the parasite and the blood-making organs is in a state of equilibrium. So long as the patient remains in a malarial climate the condition may become acute through reinfection, especially when assisted by outside influences. The merozoites resulting from segmentation, according to this theory, do not invade new cells, but hibernate somewhere in

the organism and become active when reinforced by a new infection, or die when the patient removes to a non-malarial climate, but they do not, *per se*, produce any paroxysms. The writer holds that in these cases of chronic malaria without paroxysms or marked cachexia, quinine, as well as other factors disturbing the symbiosis, may produce symptoms of intoxication, including hæmoglobinuria.

The only time to give quinine is when developing parasites are found in the peripheral blood, provided also that the infection is fresh, as shown by a characteristic fever-curve. It is his practice in the autumn to give two or three 10- or 15-grain doses of sodium thiosulphate at desirable intervals until the bowels are freely emptied. Pernicious cases must, of course, be treated more expeditiously. The author advocates, especially, frequent blood-examinations of persons living in malarial districts, even if well.

The screening of houses and the destruction of breeding places of anopheles should be encouraged so far as possible, but the prophylaxis of malaria and its definite local eradication depends on the destruction of the parasite within its alternative host, man. W. Krauss (Journal of the American Medical Association, March 16, 1907).

MORPHINISM, CHRONIC.

The victims of chronic morphinism are divided by the writer into the opium-eater, the opium-smoker, and the one who uses it hypodermically. The first is the least common, and in the East, at least, it is taken as much as tobacco or caffeine is taken here. Opium-smoking is the least harmful, much of the morphine which is in the opium being destroyed by heat. Morphine injection is the worst form of the habit. Neurotics are most susceptible to this habit. Large doses of the drug are tolerated by those who are victims of this habit, because the greater portion of the alkaloid is destroyed within the body, like starch or alcohol. A morphine habitué loses flesh and becomes sallow, his mouth is parched, and he has gastric catarrh and chronic constipation. When out of the influence of the drug, the psychical centers become hypersensitive, and sudden withdrawal of the drug may threaten the patient with collapse. It is therefore wise in treating this condition to gradually diminish the drug, and administer cerebral depressants if they are indicated. A generous diet is very important, alcohol should be used sparingly, if at all, and open-air exercise, tonic douches, and massage should be administered. Relapses after apparent cure are very common. W. E. Dixon (Practitioner, May, 1907).

NEURASTHENIA.

The proposition that neurasthenia is a distinct pathological entity stands unproven. There is a large and ever-increasing class of individuals whose nervous organization is so unstable that it readily succumbs to overstrain, shock, excesses, and the weakening effects of disease. In these predisposed persons a marked general reduction in the activity of the nervous functions may eventuate from a variety of comparatively local diseased conditions. Probably in all cases where the neurasthenic condition becomes chronic it rests upon and is perpetuated by some equally chronic vice or disease. The great variety and changeability of the symptoms are further evidence of their indirect and secondary character. Any scheme of treatment of chronic neurasthenia not founded on the foregoing assumption

has so far proved to be practically useless in effecting a cure. Hiram Elliott (Long Island Medical Journal, May, 1907).

PNEUMATURIA.

Pneumaturia may occur either as the result of a rectovesical fistula or of intravesical fermentation. In the latter type the gas may originate either from the fermentation of glucose in diabetes, or from the decomposition of proteid substances in cystitis. Of the non-diabetic cases, the microörganism responsible for the pneumaturia has been isolated in only eight cases: in three, it was the bacillus lactis aërogenes, and in five the bacterium coli commune (or immobile).

In pneumaturia due to the bacillus lactis aërogenes, the gas formation is readily referable to the peculiar characteristics of the bacillus. In pneumaturia due to the bacterium coli commune, the gas formation may be due (*a*) to the presence of some proteid not yet definitely determined, that yields a gas when broken down anaërobically by the bacterium coli commune, as suggested by Adrian and Hamm, or (*b*) to the presence of a peculiar strain of bacterium coli commune that is capable of producing gas where the usual varieties fail to do so. A. E. Taussig (Boston Medical and Surgical Journal, June 13, 1907).

PROSTATE GLAND, NEW GROWTHS OF THE.

Except in very early cases, the writer does not consider it wise to operate upon malignant disease. If operation is permissible it must be radical—not an enucleation, but an excision, and even if life is saved, the patient will be permanently incontinent. The risk of immediate mortality in these cases is very high.

There is a small proportion of cases where the prostate is interfering with micturition where the enlargement is fibrous, and in these cases, piecemeal excision, either suprapubic or perineal, can be done, but not an enucleation entire. In these cases the writer prefers perineal prostatotomy, and gets very good results, with slight danger. Some few aged men suffering from adenomatous enlargement of the prostate show a very marked tolerance of catheterism, and live very comfortable lives. In these cases interference by the surgeon is unnecessary. Unfortunately, catheter life in the great majority of sufferers has serious dangers and discomforts, and for these prostatectomy is by far the best method of treatment. It should be done at the period of election—namely, when the symptoms are becoming marked, but before cystitis, infection of the kidneys and their results have placed the patient in a position of danger, and, in the writer's opinion, the best method in adenoma of the prostate is suprapubic enucleation.

The surgeon should not refuse operations to cases seriously infected and ill. Their lives are sure to be painful and seldom prolonged if operation is not resorted to, and, although the mortality is higher than in carefully selected cases, it is not unduly high. John Pardoe (Clinical Journal, April 17, 1907).

PUERPERAL ECLAMPSIA, CONNECTION OF LACTIC ACID WITH THE CONVULSIONS OF.

The writer considers the theories of Zweifel and his co-workers who ascribe to sarcolactic acid an important rôle in regard to the convulsive seizures in puerperal eclampsia. In order to in-

vestigate the power of this agent to evoke convulsions, he first studied the cerebrospinal fluid of epileptics, usually obtained shortly after an attack, and in another set of experiments introduced considerable quantities of it into the circulation of animals. The fluid obtained by lumbar puncture from nine epileptics was examined, but it was never possible to demonstrate the presence of any lactic acid. On injecting from 1 to 1½ grams per kilo of neutral sodium lactate into dogs, no symptoms of any importance were caused. The author therefore concludes that in eclampsia, as well as in epilepsy, the muscular action attending the convulsions induces the formation in the muscles of sarcolactic acid. This is then rapidly oxidized in the blood, and only a small portion of it is excreted unchanged in the urine. It is accordingly not to be regarded as having anything to do with the causation of the convulsions in eclampsia, and is simply a secondary manifestation of the muscular activity. Donath (Berliner klinische Wochenschrift, March 4, 1907; Medical Record, March 30, 1907).

PYORRHŒA ALVEOLARIS.

Pyorrhœa alveolaris has been known since 1867 as Rigg's disease. The gums at the dental margins, where the transition from mucous to dental periosteum takes place, are particularly liable to a small degree of traumatism from the food and to passive injuries from the accumulation of débris. Accumulation of salivary deposit also causes passive congestion of the gum margin. An anatomical peculiarity of the gum margin is the small amount of sensory nerve supply, rendered necessary by the provision for mastication, but which allows small abrasions and wounds to pass unnoticed. Many disease conditions have been cited as predisposing causes of pyorrhœa, such as diabetes mellitus, rickets, typhoid fever, and repeated pregnancies. The exceedingly insidious onset and great chronicity of the disease point to the preliminary stage of infection as either a local infection around two or more teeth, or a general infection spreading from the buccal mucous membrane. In the early stages the gums are red and thickened, but there is no pus; gradually pockets form between the teeth and the gum, and these fill with pus. Pain is an uncommon symptom.

A more serious question than the local infection is the general infection which occurs in early as well as late alveolar pyorrhœa. Infection takes place from the gums by three channels; (1) spread of infection by continuity of tissue, by which the antrum, the eye, and the ear become infected; (2) the ingestion of bacteria and bacterial products by way of the stomach; (3) direct entrance of bacteria and their toxins by way of the gum. Secondary anæmia is the commonest general symptom; next come various forms of toxæmic gastro-intestinal disturbances; and then pigmentation of the skin, acneiform eruptions, and other skin-affections. Depression, often amounting to melancholia, is not rare.

The author has made a careful bacteriological study of a large number of cases, and found that streptococci and staphylococci, in about equal proportions, together made up 60 per cent. of the organisms present. After the particular organism was isolated in each case, a vaccine was prepared therefrom, and the opsonic index of the blood for that particular organism raised by repeated inoculations. He found that after the positive phase of immunization had been produced, local treatment pro-

duced far better results. Curetting was unlikely to cause infection, and cauterized surfaces healed quickly. In seeking the etiology and origin of the affection, evidence is brought forward suggesting the derivation of the infecting bacteria from a common source of infection—milk. K. W. Goadby (Lancet, March 9, 1907).

RENAL HÆMATURIA, ADRENALIN IN UNILATERAL.

A case of unilateral renal hæmaturia, of supposed traumatic origin, of sixteen months' duration, and without evidence of nephritis, cured by adrenalin. Pain was constant on the right side, the side of the injury, but the hæmorrhage was from the left kidney. The adrenalin was injected through the urethral catheter; only one injection of 6 cubic centimeters of a solution of 2 cubic centimeters of adrenalin in 8 cubic centimeters of sterile water was given. Some pain was caused at first, but soon disappeared, and the urine cleared up entirely in about ten days, and there was a general improvement in the patient's condition. Three months after the treatment the man was in almost perfect health, having only occasional slight pains in the back and headaches much less severe than those formerly troubling him.

Bilateral catheterization should always be performed. The case reported, he thinks, demonstrates the importance of attempting to stop the hæmorrhage by the injection of adrenalin through the ureteral catheter, and the excellent result in this case proves conclusively its therapeutic value in certain cases. Even with definite lesions present it would appear not to be contraindicated, and it may be of great diagnostic value. The weakening effect of the hæmaturia would be abolished and a more careful study of the urine facilitated. If in this way a cure can be effected, as in the case reported, the patient would be saved the ordeal of a cutting operation. In case of an ulceration of a tumor into the urinary passages, the use of adrenalin would not necessarily delay an exploratory operation if indicated. The author is convinced that the intra-ureteral injection of adrenalin is practically free from danger. H. H. Young (Journal of the American Medical Association, May 18, 1907).

ROENTGEN IRRADIATION, CHANGES PRODUCED IN THE KIDNEYS BY.

Percutaneous Roentgen ray exposures of small animals for half an hour to an hour produce at once slight nuclear changes in the renal epithelium, characterized by swelling of the nucleus, vacuolation, clumping of the chromatin, and some loss of sustaining power. Recovery from this primary injury to the chromatin is prompt, but there follows, after six to twelve hours, a secondary kidney change, characterized by albuminuria and cloudy swelling. This second change occurs during the period of phagocytosis and removal of the lymphoid detritus from the spleen, bone-marrow and lymph nodes, and appears to be in direct proportion to the degree of lymphoid destruction. It is, of course, possible that this second kidney change is but the result of the primary disturbance of the nucleus, but the first explanation seems to the writer more probable.

In the case of an animal exposed continuously until death occurs, the renal changes are more marked, the renal cells being diminished in size, cloudy, and the tubules distended with an albu-

minous precipitate. Continuous exposure of five hours or more is invariably fatal to small animals, death occurring within ten days, following marked symptoms of paresis and coma. These symptoms also bear a definite relation to the amount of lymphoid destruction and to the kidney lesion. To what extent they are dependent upon direct injury to the central nervous system cannot be said at the present time. The character of the symptoms suggests a primary or secondary damage to the central nervous system. The assumption of a primary injury is upheld by the fact that all small animals exposed for five hours or more became either totally or partially blind. On the other hand, the progressive development of the symptoms some days after the injury is very suggestive of an intoxication, and the character of the symptoms accords with that of poisonings due to products of protein destruction.

If practical application may be made of these conclusions, it would seem that the destruction of great numbers of leucocytes, as occurs in the Roentgen-ray treatment of leukæmia, may be dangerous to the organism, either in its action upon the central nervous system, or upon the kidneys. As to the occasional irradiation of the human body, it is hardly likely that any serious damage to the kidneys could result, but in the case of repeated and prolonged irradiation of the lymph-nodes and spleen, the possibility of renal injury should be borne in mind. Careful and repeated examinations of the urine, therefore, should be made in all such cases. In the case of preëxisting nephritis, a dangerous exacerbation may be excited by irradiation.

It is probable that the Roentgen rays cause disturbance of the chromatin of all cells, the lymphoid-cells and the epithelial cells of the testis being the most susceptible. As compared with these, the renal cells are much more resistant. In a general way, then, the view is upheld that all cells capable of rapid proliferation or renewal are especially susceptible to the action of Roentgen rays. A. S. Warthin (American Journal Medical Sciences, May, 1907).

STATUS LYMPHATICUS.

The status lymphaticus, as its name implies, is more a constitutional condition than a disease *per se*. It occurs mostly among tall, rather sparely-built subjects, with fair, clear skins, rather pale, but not with the dead-white pallor of anæmia. They are of a slow, sedentary habit of life; are mostly highly intelligent, but in a deep, earnest way; they are self-concentrated, shy with strangers, and of a retiring disposition, but genial and brilliant when at ease. They are very sensitive to climatic influences and feel cold keenly. The pulse is usually slow, but under the stress of worry may mount to above 100, and remain there for days. Sudden death is common, and is probably due to some interference with the nerve-centers which causes the dilated walls of the heart to cease contracting. Subjects of the status lymphaticus recover slowly from acute illnesses, which are apt to become chronic. On the other hand, they are less liable than others to neurotic and tuberculous affections. The condition has also a distinct tendency to improve with advancing years. L. Vintras (Lancet, May 11, 1907).

STERILITY AND ITS TREATMENT.

In seeking the cause of sterility in women, not only the whole range of diseases peculiar to women must be con-

sidered, but as well the physical and social conditions of the individual. No other condition requires a more detailed knowledge of the physiological and pathological processes that take place in the female genital tract, and depending upon one's ability to distinguish the various processes will depend the success met in the treatment. Once healthy semen is deposited in the upper segment of the vagina and conception does not take place, clinically the woman is at fault. At times the cause is very obscure; but aside from the many pathological lesions that may be present, functional disturbance, no matter of how mild a nature, will cause the woman to be sterile. Particularly is this true in that class of women who suffer from a general muscular relaxation, are ill-nourished and highly nervous. For in order that the spermatozoön may reach its destination, two mechanical forces besides its own motile power are directly engaged in compelling it to travel in the direction of the uterine cavity. From below, the perineal body or pelvic floor, by the constant contraction and relaxation of its muscular structure, produces a wave in the direction of the cervix; hence the spermatozoa are carried along with this wave. This function of the perineum is probably one of the most important factors in holding the uterus in its normal position. From above, the uterus, constantly undergoing some contractions, must, by virtue of its being hollow, have some suction power which also aids the spermatozoön in its uphill travel. In patients who suffer from a general muscular relaxation these mechanical processes are greatly diminished, with the result that conception does not take place, for, in addition to it, the fact must not be overlooked that the wave produced by the ciliated epithelium lining the uterus is outward, and certainly must hinder such a minute body as the spermatozoön from progressing in an opposite direction. A. J. Ronginsky (Medical Record, June 22, 1907).

SUPRARENAL EXTRACT, ACTION OF, AND METHOD AND INDICATIONS FOR ITS USE.

Adrenalin is a remedy which must be employed with great care in all patients with suspected arterial degeneration. In elderly people, both on account of atheromatous arteries and myocardial changes, it is a dangerous remedy. The danger from glycosuria is very slight and may be overlooked. Much more important is the possibility of causing an arterial atheroma. In rabbits it has been found that a single intravenous injection may cause decided changes in the media and its continued use destruction of the muscle-fibers and later calcification. It has, furthermore, been shown that these same changes may be produced by administration of large amounts by mouth or subcutaneously. It must not be concluded, however, that its use in man with the usual dosage is necessarily attended with the same danger. There is reason to believe that the rabbit is especially prone to such changes, as attempts to produce these in some other animals, as dogs and monkeys, have failed. A variety of substances, some of them well recognized therapeutical agents, as barium chloride, physostigmine, lead, and digalen, will produce these same changes in rabbits, and further experimentation would probably show that this list can be added to. It is probably true, however, that these changes are more readily brought about by adrenalin than by any other substance employed up to the

present time. Again, the dosage per kilo, when used subcutaneously, is fifty times our therapeutical dose in man. When it is considered that subcutaneously in animals the majority of investigators have never been able to produce vascular changes, it would appear that the danger of the drug in this respect could easily be overestimated. Its continuous intravenous use should be discouraged. It is not probable that a single intravenous injection would cause vascular changes, although it has been shown that this may occur in rabbits; the real danger attending its use, however, is immediate cardiac disturbance, especially acute dilatation. J. L. Miller (Journal of the American Medical Association, May 18, 1907).

SYPHILIS, DIAGNOSIS OF.

The physician must recognize and assume the responsibility of a positive diagnosis of syphilis before advising the recognized course of constitutional treatment. He may consider the features of a case sufficient to make a diagnosis in the primary period, but the establishment of a diagnosis in this period is attended with considerable difficulty; and inasmuch as the early use of mercury may modify the secondary symptoms to such an extent as to produce an hiatus in the patient's history, one certainly assumes a tremendous responsibility by this method.

Although one cannot absolutely depend upon the development of secondary symptoms in every case, it is undoubtedly a very rare occurrence for them to be overlooked by a physician who expects to see them appear. It would seem preferable, therefore, to accept this slight chance of ignoring a case rather than risk the possibility of condemning many, or even one innocent patient, to a life of mental misery and unnecessarily giving him several years of antisyphilitic treatment.

A careful search for the *Spirochæta pallida* should be made in the primary and secondary lesions of every case, for if they are demonstrated one will add considerable strength to the diagnosis. The writer believes the time is probably not far distant when a diagnosis of chancre can be based upon a diagnostic serum or by the microscopical examination of a smear preparation and the constitutional treatment at once instituted. It is not beyond reasonable expectation to anticipate the development of an antiluetic serum, doing away with the time-honored mercury. G. M. MacKee (Medical Record, April 6, 1907).

TONSILLAR INFECTION, REMOTE EFFECTS OF.

The pathologic conditions that appear as the late results of tonsillar diseases are discussed by the writer, who first remarks that the importance of this source of infection for heart disease has been pretty thoroughly exploited and that he has himself reported in a previous paper some typical cases and reviewed the literature. Since then he has observed recurrent endocarditis, chorea, and muscular rheumatism occurring in certain of his old patients, and he considers that continued slight fever in children is probably a common result of tonsillar disease in San Francisco. A rather peculiar complication of pericarditis, pneumonia, and lung abscess is reported. Nephritis after tonsillitis without rheumatism is, he thinks, a commoner complication than is generally supposed, and has occurred four times in his cases. One of these, complicated by acute mania, is reported, as also one of fatal staphylococcic septi-

cæmia and one diagnosed as leukæmia occurring in connection with, and presumable as the result of, tonsillar disease. The evidence, he thinks, clinical and experimental, tends to show that more and more connection is being established between the tonsillar cervical route and lung tuberculosis. Histologic studies alone are insufficient, the proportion of tonsillar involvement, as shown by Lartigau's results, in which tubercle bacilli were found in only 2 out of 135, and then only in small numbers, while 12 out of 75 inoculation experiments gave positive results. The writer considers that in the study of portals of entry of disease into the human body, the pharyngeal and especially the faucial tonsils have an importance not well enough recognized or understood, but increasingly appreciated in the light of each new clinical or experimental study. P. K. Brown (Journal of the American Medical Association, June 15, 1907).

TUBERCULIN AS A DIAGNOSTIC AGENT IN INCIPIENT PULMONARY TUBERCULOSIS.

The dose of tuberculin for diagnostic purposes varies among different men; almost all agree that 10 milligrams is the maximum dose. Just as much, if not more, importance should be placed on the local reaction, *i.e.*, increase of vocal fremitus, increased area of impaired percussion note, harsh breath sounds, and the appearance probably for the first time of crepitant râles, as on the general reaction. Although there is a slight margin of error, the reaction is specific for tuberculous lesions. It is perfectly harmless if properly administered in suitable cases. The value, therefore, of such a simple method of accurate diagnosis in the period before ere are any very definite signs cannot be overestimated, for it is known that tuberculosis of the lungs, if taken and properly treated from the incipient stage, can in the great majority of cases be absolutely cured. Louis M. Warfield (St. Louis Medical Review, May 18, 1907).

TUBERCULIN IMMUNIZATION.

The specific treatment of tuberculosis by tuberculin is based on the principle of artificial immunization. Experimental work has shown that immunity may be produced in animals to a certain degree. The difficulty with artificial immunity in general is that there is little evidence that one attack will protect from another. The part played by antitoxins, antibodies, agglutinins, bacteriolysins, and opsonins is as yet imperfectly understood, but it may be taken for granted that they are all factors in the attempt to protect the body against bacterial infection. If tuberculin is used by the clinical method, it is observed that infinitesimal doses, methodically increased, result in a well-marked degree of toxin immunity, which is shown by increased toleration to larger doses of toxin.

The two most important factors in obtaining results are the length of time over which the treatment is extended and the dose of toxin the patient can be made to tolerate. Reparative changes are necessarily produced slowly, and antitoxic or antibacterial immunity is also slowly induced. Not much permanent benefit can be expected from treatment lasting only a few months, especially if a fraction of a milligram is the highest dose reached when the treatment is discontinued. E. L. Trudeau (American Journal of the Medical Sciences, June, 1907).

TYPHOID FEVER, PERFORATION IN.

Five cases of perforation in typhoid fever are reported by the writer, and special attention is paid to the various signs and symptoms supposed to be pathognomonic. The pulse-rate rose in four cases, and in one was the only marked feature. Peritoneal symptoms were diagnostic in one case, while some pain was present in all. The temperature rose in three cases, but fell later. Leucocytosis was marked in one case, but other signs were also unmistakable. A rise in blood-pressure immediately following the catastrophe has been recently stated to be indicative of perforation. Crile has reported five cases, in every one of which the pressure rose immediately after perforation. The average blood-pressure in 115 cases of typhoid fever was found to be 104, varying between 138 and 74. In the writer's cases, however, the rise of blood-pressure did not appear to be as certain, and consequently as valuable a sign, as Crile's figures would indicate.

The signs of perforation are, however, notoriously uncertain, and in no case of typhoid fever with any one well-recognized sign (providing there is no other ascertainable cause) should hesitation be felt to diagnosticate a perforation. Among these signs should certainly be placed a rise in blood-pressure. It seems quite as constant as leucocytosis, and is certainly more easy to observe and chart throughout the course of the disease.

In the diagnosis of perforation it must be remembered that the signs are nearly always most marked about two hours after the accident has occurred, after which they are usually found to return to their previous conditions. The change in blood-pressure is no exception to this rule, as the tendency seems for it to fall again to its original level as rapidly as it has risen. But a stationary pressure is no indication that perforation has not occurred. A. L. Sheppard (Lancet, May 11, 1907).

VALVULAR DISEASE OF THE HEART COMPLICATING PREGNANCY AND LABOR.

Any organic heart-lesion, even if perfectly compensated under normal conditions of life, should arouse apprehension and call for constant watchfulness if pregnancy supervenes. In case pregnancy comes as a complication when the heart-lesion is imperfectly compensated, the indication is for immediate relief by emptying the uterus, since a heart which is not able to care for its ordinary work has no chance of supporting the added burden of pregnancy. When a previously well-compensated heart fails under the extra work thrown on it by pregnancy, an attempt may be made to restore compensation by rest and appropriate treatment, but, unless these measures are promptly successful, the heart must be relieved by the removal of the extra burden. In any case in which an organic heart-lesion can be demonstrated, even though it may have caused no symptoms during pregnancy, labor should be regarded with apprehension, and every means should be taken to shorten the strain of labor, and thus relieve the heart of its extra burden, although it may seem to be doing its work satisfactorily.

Experience has repeatedly demonstrated that a patient with an organic heart-lesion will stand operation perfectly well, if the operation is performed at a time previous to the acute dilatation which so commonly complicates heart cases when subjected to a prolonged strain. On the other hand, pa-

tients who are subjected to operation after dilatation has ensued as a result of the strain of prolonged labor not infrequently succumb to the strain of an operation which at an earlier period would have been borne without serious symptoms. F. S. Newell (Surgery, Gynæcology, and Obstetrics, May, 1907).

Book Reviews

A Manual of the Diagnosis and Treatment of the Diseases of the Eye. By Edward Jackson, M.D., Professor of Ophthalmology in the University of Colorado. Second Revised Edition. 12mo of 615 Pages, with 182 Text-illustrations and 2 Colored Plates. Cloth, $2.50 net. W. B. Saunders Company, Philadelphia and London, 1907.

This work is intended as a special reference book for the general practitioner, as well as to meet the needs of the beginner in ophthalmology. It has been thoroughly revised, and in this edition it has been enlarged to quite 600 pages. While space has been given to newly recognized conditions, the author is most conservative in his exposition of them, as well as in his advocacy of the recently proposed plans of treatment in well-known diseases. Dr. Jackson's methods of examination are direct and simple. As might be expected, the chapters on Refraction and Skiascopy are thorough and explicit, and express his views on these subjects. Of particular value are the chapters on Special Conditions that Influence Keratitis; Uveitis in its General Relations; Theories of Sympathetic Ophthalmia; General Considerations regarding Diseases of the Retina; the X-Ray; Removal of Foreign Bodies in the Eye; Magnet Extraction; and the applications of the newer additions to the Materia Medica. The manual is completed by an enlarged index and a most helpful bibliography of recent ophthalmic literature.—B. K. C.

The Elements of the Science of Nutrition. By Graham Lusk, Ph.D., M.A., F.R.S.(Edin.), Professor of Physiology at the University and Bellevue Hospital Medical College, New York City. Octavo of 326 Pages, Illustrated. Cloth, $2.50 net. W. B. Saunders Company, Philadelphia and London, 1906.

This book is intended to teach the elements of the science of nutrition, but it would be preferable if the author had embodied in the title of his book that he only gives laboratory experiments, which, from the standpoint of the practitioner, do not by any means give us an idea of the science of nutrition. He states himself at the end of the volume that "the primary cause of metabolism remains a hidden secret of the living bioplasm;" if to this were added the fact that Foster recently stated that what we know of metabolism is made up of "guesses and gaps;" and the fact that physiologists "know nothing of the path taken by the products of proteid and carbohydrate digestion," as stated by Beddard; and that "the form in which proteid is absorbed remains a mystery," as stated by Howell; and many other facts that could be adduced, it must be frankly said that a book claiming to be on the science of nutrition cannot be of very great value to the practicing physician under these conditions, even when written by as able a laboratory investigator as Professor Graham Lusk.—C. E. de M. S.

A Text-book of Pharmacology and Therapeutics: or, The Action of Drugs in Health and Disease. By Arthur R. Cushny, M.A., M.D. Fourth Edition, Thoroughly Revised. Illustrated with fifty-two Engravings. Lea Brothers & Co., Philadelphia and New York. 1906.

Dr. Cushny's Pharmacology and Therapeutics has become a standard, and his fourth edition shows that he keeps up with the literature on the subject. It would be preferable, however, if he dropped the custom of considering the physiological action of several drugs conjointly, for it tends to mislead the reader. We hope that at some future date he will make it possible to enlarge his book, to treat fewer drugs, and to take each individually. On the whole, however, the work is a very meritorious one.

PHYSIOLOGY OF THE NERVOUS SYSTEM. By J. P. Morat. Authorised English Edition, Translated and Edited by H. W. Syers, M.A., M.D. With 263 Illustrations. W. T. Keener & Co., Chicago, Ill. 1906.

Professor Morat's treatise on the physiology of the nervous system is well known to all investigators. The subjects treated by the author include, The Nervous Element; Energies of the Nerve; Sensibility and Movement, Their Relations; Primary Systematizations; Consciousness and Unconsciousness; Superior Systematizations; Tactile Innervation; Visual Innervation; Auditory Innervation; Olfactory and Gustatory Innervations; Language and Ideation; all subjects which are of very great interest to those giving special attention to nervous diseases and psychology. It is the kind of a work that all physicians who wish to keep abreast with progress should possess.

A TEXT-BOOK OF PHYSIOLOGY, NORMAL AND PATHOLOGICAL. For Students and Practitioners of Medicine. By Winfield S. Hall, Ph.D., M.D. Second Edition, Revised and Enlarged. Illustrated with 340 Engravings and 3 Colored Plates. Lea Brothers & Co., Philadelphia and New York. 1905.

Dr. Hall's work on physiology, normal and pathological, is well known to all physicians who give any attention to this subject. It has the great merit of being concise and giving clearly, notwithstanding this conciseness, an idea of the prevailing views as to function. It touches also upon such questions as albuminuria, functional and organic; urotoxæmia; urosepsis; œdema; and in this manner affords considerable practical information to the practical physician. Dr. Hall's book is thoroughly entitled to the excellent position it has gained for itself in the world of science.

THE READY REFERENCE HAND-BOOK ON DISEASES OF THE SKIN. By George Thomas Jackson, M.D. With 91 Illustrations and 3 Plates. Fifth Edition, Thoroughly Revised. Lea Brothers & Co., New York and Philadelphia. 1905.

This is an excellent and practical little work on diseases of the skin, and of a kind that is very much needed by the general practitioner. The fact that the work now is in its fifth edition speaks of its value. The author has added to this edition, the following subjects: Acne Agminata, Acne Necrotisans et Exulcerans Serpiginosi Nasi, Acne Telangiectodes, Acrodermatitis Perstans, Acrodermatitis Chronica Atrophicans, Asteatosis, Botryomycosis Hominis, Cheilitis Exfoliativa, Erythema Serpens, Congenital Ichthyosiform Erythrodermia, Folliclis, Depilating Folliculitis of the Limbs, Granuloma Annulare, Granulosis Rubra Nasi, Hyponomoderma, Koilonychia, Multiple Benign Sarcoid, and Veld Sore.

A TREATISE ON THE MOTOR APPARATUS OF THE EYES, Embracing an Exposition of the Anomalies of the Ocular Adjustments and their Treatment, with the Anatomy and Physiology of the Muscles and their Accessories. By George T. Stevens, M.D., Ph.D. Illustrated with 184 Engravings, some in Colors. Cloth, pp. 496. Price, $4.50 net. F. A. Davis Co., Philadelphia. 1906.

In 1884, Stevens published his "Functional Nervous Diseases," in which he declared that difficulties of adjustments of the eyes are a source of nervous troubles, and more frequently than other conditions constitute a neuropathic tendency. This pronouncement was epoch-making, for at that time only actual strabismus had been studied; and it is through Stevens's original observations that our knowledge of heterophoria has been developed. Since then he has been issuing, from time to time, monographs upon various phases of the subject as they have been elicited; he has now grouped these together in book form. In this sequel he presents in a systematic form the principles governing the physiological actions and the anomalous disturbances of the motor apparatus of the eyes. The book ought to be a convenient reference book for the general practitioner, the neurologist, and the oculist.

The historical notes of strabismus are interesting. The first part of the book describes the anatomy of the motor muscles of the eyes and the parts accessory to them. Of particular value and interest are the descriptions of the capsule of Tenon and the comparative anatomy

of the mammalian eyes and those of the other orders. The part relating to physiology deals with adjustments, the subject of perspective, and the psychology of sight. Parts 3 and 4 describe in great detail the anomalous conditions of the motor muscles of the eyes, consistent and inconsistent with the physiological state, and here heterophoria and its treatment and the fixed paralyses of the muscles are dealt with.

There are many original pictures and diagrams. The work is comprehensive and original, but it is distinctly a "one man's book," for it neglects the ideas advanced by other workers.—B. K. C.

ANNALS OF SURGERY. Special Illustrated Number. June, 1907. A Monthly Review of Surgical Science and Practice. Edited by Lewis Stephen Pilcher, M.D., LL.D., New York, with the collaboration of J. William White, M.D., LL.D., of Philadelphia; Sir William Macewen, M.D., LL.D., of Glasgow; W. Watson Cheyne, C.B., F.R.S., of London.

This number of the Annals of Surgery is an exceptionally good one, as the majority of the subjects touched upon are of unusual interest at the present time to the surgeon. J. Collins Warren, M.D., contributes a very instructive paper on the "Plastic Resection of the Mammary Gland." In an article entitled "The Contributions of Surgery to a Better Understanding of Gastric and Duodenal Ulcer," William J. Mayo, M.D., handles the subject in his usual masterly manner. Among other prominent contributors to this number are J. C. Munro, M.D., R. C. Coffey, M.D., W. W. Keen, M.D., and C. H. Frazier, M.D.

The illustrations throughout are of full-page size, and show extremely well the conditions they represent. The reproductions of the skiagraphs are especially worthy of note. The volume is completed by an index covering the contributions for the last six months. A list of the contributors is also appended.—R. B. S.

SURGICAL DIAGNOSIS. By Daniel N. Eisendrath, M.D., Adjunct Professor of Surgery in the Medical Department of the University of Illinois (College of Physicians and Surgeons). Octavo of 775 Pages, with 482 Original Illustrations, 15 in Colors. Cloth, $6.50 net; Half-morocco, $8.00 net. W. B. Saunders Company, Philadelphia and London, 1907.

Appreciating the necessity for an early and correct surgical diagnosis, the author has presented to the profession a work which should prove a boon companion, not only to the surgeon, but also to the man who is called upon to make the primary diagnosis—the physician. Throughout the entire volume, the writer shows his clear conception of the needs of the clinician; and his close association with the class-room is shown by his easy and practical handling of the different surgical conditions. In the very first chapter, and continued throughout the book, the complete mastery of the subject is evident. Almost every surgical condition is taken up, with the exception of those connected with the eye, ear, nose, throat, and the skin, and discussed in a most illuminating style. The text is re-enforced by illustrations; especially is this noted where doubt is apt to arise in the mind of the reader. In fact, there seems to be an illustration for almost every known surgical condition. Even with this supply of excellent cuts, there is no apparent curtailment of the subject matter.

The section on the examination of the blood, including a brief consideration of the opsonins and the opsonic index, was written by Dr. D. L. Schram; and that on cystoscopy and ureteral catheterization by Dr. Gustav Kolischer.—R. B. S.

A TEXT-BOOK OF DISEASES OF INFANCY AND CHILDHOOD. Their Dietetic, Hygienic, and Medical Treatment. By Louis Fischer, M.D., Visiting Physician to the Willard Parker and Riverside Hospitals of New York City; Former Instructor in Diseases of Children at the New York Post-graduate Medical School and Hospital, etc.; Fellow of the New York Academy of Medicine. Fully Illustrated. Pages 979. Extra Cloth, $6.50, net; Half-morocco, $8.00, net. Sold only by Subscription. F. A. Davis Company, Philadelphia, 1907.

It is gratifying to note the appearance of a new text-book devoted to the rapidly developing subject of pediatrics, especially such an up-to-date work as that of Dr. Fischer's. This is a desirable text-book for both practitioners and students in medicine.

Particular stress is laid on diagnosis, symptomatology, and treatment; but ample consideration is given to the subjects of pathology and bacteriology.

The author has enhanced the value of his book by including brief descriptions of interesting cases, illustrating the different conditions under consideration.

The volume is full of practical suggestions which will prove of great value to the practitioner among children. Certain statements which the author has desired to emphasize particularly, he has had placed in italics, as the following: "No matter what the child suffers with, it is important to examine the throat."

The subject of infant-feeding in all its phases is most carefully considered. Maternal nursing, wet-nursing, and artificial feeding, including all the different methods of home-modification, are thoroughly described. The various disorders arising from improper feeding are also fully explained. The author is one of those who believe, when starting an infant on a modified milk mixture, to begin with a low percentage of proteid, and urges those using the milk laboratory to insist upon having the milk formulæ compounded by using raw milk and fresh cream. His experience with top-milk feeding has been bad. He holds the opinion that more cases of dyspepsia are caused by top-milk feeding than by any other method of feeding. Other substitute foods which are carefully considered are goat's milk, buttermilk-feeding, Lahman's vegetable milk, Gaertner's mother-milk, and Bachhaus's milk. "The writer has seen excellent results from buttermilk-feeding in atrophic and marasmic children." He records the fact that buttermilk-fed infants never have the coarse casein curds in the fæces that we so often see in the stools of infants fed on cow's milk. An interesting fact he brings out in this connection is that, if the buttermilk were originally very sour, the fæces will be very alkaline, demonstrating how feeble is the strength of the bacterium acidi lactici. From his bacteriologic examinations of the fæces of buttermilk-fed infants, he has shown the presence of the bacillus lactis aerogenes, Escherich, and the absence of the bacillus coli commune.

The author has paid special attention to the infectious diseases. The chapters treating of these diseases are very complete. Dr. Fischer is particularly well qualified to write on this subject from his large experience, both in Europe and at the Willard Parker Hospital in New York. Exception might be taken to the statement that "no form of diphtheria is more fatal than the nasal variety."

The book is divided into twelve parts: 1, The New-born Infant. 2, Abnormalities and Diseases of the Newly-born. 3, Feeding in Health and Disease. 4, Disorders Associated with Improper Nutrition, and Diseases of the Mouth, Œsophagus, Stomach, Intestines, and Rectum. 5, Diseases of the Heart, Liver, Spleen, Pancreas, Peritoneum, and Genito-urinary Tract. 6, Diseases of the Respiratory System. 7, The Infectious Diseases. 8, Diseases of the Blood, Lymph Glands or Nodes, and Ductless Glands. 9, Diseases of the Nervous System. 10, Diseases of the Ear, Eye, Skin, and Abnormal Growths. 11, Diseases of the Spine and Joints. 12, Miscellaneous.

Part twelve contains a very complete dietary of beverages, soups and broths, puddings and desserts; methods of preparing milk and eggs; a chapter on the detection of the adulteration of milk; chapters on examination of gastric contents, urine, and bacteriological memoranda; a chapter on anæsthetics, including intraspinal anæsthesia; chapters on disinfection, administration of drugs, local remedies, rectal medication, prescriptions for various diseases, and finally a table of doses.

The book is profusely illustrated. Most of the three hundred and three illustrations are original. The work also contains one hundred and seven tables and twenty-seven plates. The colored illustrations are unusually good; especially might be mentioned one of a case of diphtheria with a morbilliform antitoxin rash.—H. C. C.

Books and Monographs Received

The Editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"The Cure of Consumption with Subcutaneous Injections of Oils." By Thomas Bassett Keyes, Chicago, Ill.——"The Dietetics of Obesity." By Alfred C. Croftan, Chicago, 1906. ——"Clinical Diagnosis of Arterial Sclerosis." By Judson Daland, Philadelphia, 1907.——

"Notes in Regard to the History of Immunity in Tuberculosis." By Benjamin Lee, Harrisburg, Pa., 1907.——"Scleroma of the Larynx." By Emil Mayer, New York, 1907.——"The Physical Processes of Immunity and Infection." By Jonathan Wright, New York, 1907.——"The Heredity of Form as Illustrated in Pathology by a Study of the Cysts of the Middle Turbinated Bone." By Jonathan Wright, New York, 1907.——"Severe Ocular Pain Associated with Grippe." By John T. Krall, Philadelphia, 1907.——"The Overtreatment of Syphilis." By G. H. Fox, New York, 1906.——"Diet as a Therapeutic Measure in Diseases of the Skin." By George Henry Fox, New York, 1907.

The following have been received from the U. S. Department of Agriculture, Washington, D. C.: "Use of Fruit as Food." By C. F. Langworthy, 1907.——"Evaporation of Apples." By H. P. Gould, 1907.——"Cost of Filling Silos." By Lyman Carrier, 1907.——"The Colorado Potato Beetle." By F. H. Chittenden, 1907.——"Methods of Destroying Rats." By David E. Lantz, 1907.——"The Forest Service: What It is and How it Deals with Forest Problems." By Gifford Pinchot, 1907.——"Potatoes and Other Root Crops as Food." By C. F. Langworthy, 1907.——"Diversified Farming under the Plantation System." By D. A. Brodie and C. K. McClelland, 1907.——"Farm Practice in the Columbia Basin Uplands." By Byron Hunter, 1907.——"Dry Farming in the Great Basin." By Carl S. Scofield, 1907.——"Report of the Meeting of Inspectors of Apiaries," San Antonio, Tex., November 12, 1906. 1907.——"The Chinch Bug." By F. M. Webster, 1907.——"Progress of the Beet-Sugar Industry in the United States" in 1906, 1907.——"Experiment Station Work, XLI," May, 1907.——"A Comparative Study of Tubercle Bacilli from Varied Sources." By John R. Mohler and Henry J. Washburn, 1907.

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Sajous's Analytical Cyclopædia of Practical Medicine.

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Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

NATURE OF THE OPSONINS, AND THE LIMITATIONS OF BACTERIAL INOCULATIONS IN THE TREATMENT OF INFECTIONS.

BY D. H. BERGEY, M.D.,
Assistant Professor of Bacteriology, University of Pennsylvania.

THE fact that bacteria can exert a chemotactic influence upon leucocytes was first pointed out by Leber (1888), and we have later become better acquainted with these affinities of the leucocytes through the investigations of Massart and Bordet (1890), of Buchner (1890), and especially those of Metchnikoff (1892). These studies have shown that leucocytes have the property of either moving toward or away from certain chemical stimuli, and that living or dead bacteria, as well as the metabolic products and body-proteids of the bacteria exhibit similar stimulation of the movement of the leucocytes. Just as certain chemical stimuli exert a positive chemotactic influence upon leucocytes, and other stimuli exert a negative chemotactic influence, so under certain conditions, bacteria exert a positive chemotactive influence upon the leucocytes, while under other conditions the bacteria repel the leucocytes.

The observation made by Metchnikoff, that leucocytes are capable of taking up virulent anthrax organisms and devouring them, led him to emphasize the great importance of the leucocytes in warding off disease in normal individuals. The increase of the phagocytic influence of leucocytes upon various forms of bacteria as seen in the blood of immune animals over that seen in normal animals, as was pointed out by Bordet and others, led Metchnikoff and his associates to regard this property as of fundamental importance in acquired immunity. The teaching of the French school, for a number of years, has been that the greater phagocytic powers of the leu-

cocytes in immune animals are due to a stimulation of these powers by some substance which the blood-serum acquired during the immunizing process.

That the theory of the French school with regard to the manner in which are exerted increased phagocytic powers of the leucocytes in immune animals is incorrect, was revealed by the brilliant investigations of Wright and Douglas (1903). These investigators found that before the leucocytes could exert their phagocytic powers, it was necessary for the bacteria to be acted upon by a substance found normally in blood-serum. Without the intervention of this constituent of normal blood, very little, if any, phagocytosis occurred. This fact was shown by the use of blood-serum that had previously been subjected to heat, when it was found to have lost this property.

The substances found in normal blood which possess this effect upon bacteria were called "opsonins" by Wright and Douglas, because they prepared the bacteria for phagocytosis. The opsonins, while present in small quantities in normal blood-serum, may be increased in amount through recovery from natural or induced infections by certain bacteria, or through the injection of the dead bacteria, certain of their metabolic products, or the proteids of their body-substance.

In the light of the investigations of Wright and Douglas and those of Neufeld and Rimpau (1904), as well as those of numerous other investigators during the past three years, it is evident that in themselves the bacteria do not exert a positive chemotactic influence upon leucocytes. The bacteria themselves are either indifferent in their action upon the movements of the leucocytes, or they exert a negative chemotactic influence. It is only after the opsonins have conferred upon the bacteria a positive influence, or have converted their negative influence into a positive one, that the leucocytes are capable of taking them up and digesting them.

Experimental investigations upon the nature of the opsonins and their influence upon bacteria have revealed the fact that highly virulent bacteria are far less susceptible to the influence of the opsonins than are a-virulent strains of the same bacteria. As the virulence of an organism is increased by successive passages through susceptible animals, their susceptibility to the influence of the opsonins decreases; while, on the other hand, in proportion as the virulence of an organism decreases by continued cultivation on artificial media, the susceptibility to the influence of the opsonins increases. The degree to which a particular culture is susceptible to phagocytosis in normal blood is, therefore, in direct proportion to its infecting powers. The exact manner in which the bacteria are able to overcome the effects of the opsonins so as to protect themselves against the phagocytes is as yet unknown,

but it is believed to be due to the acquirement, on the part of the bacteria, of a direct destructive or neutralizing power for the opsonins.

Neufeld and Rimpau conclude from their investigations that the bacteriotrophic substances (as they call them) of the serum have a close relation to the receptors of the bacterial cells upon which the virulence rests, and that they are a reaction-product of the infected organism against these receptors. A-virulent organisms are deficient in these particular receptors, and hence can not cause the specific reaction in the body; while highly virulent bacteria possess these receptors in large amounts, and hence are able to produce injurious effects.

The occurrence of small quantities of opsonins in the blood-serum of normal individuals and the relative increase of these substances after recovery from infection falls in line with what we have found with regard to the other types of antibodies or immune substances with which we had already become acquainted. Thus it has been found that the blood-serum of normal individuals contains small amounts of antitoxic, bactericidal, and agglutinative substances, and that these are increased as the result of recovery from certain forms of infection.

The opsonins may, therefore, be classed as that form of antibodies, found in the blood-serum of man and animals, which have the power of so acting upon bacteria as to prepare these for subsequent ingestion and destruction by the leucocytes. Hektoen and Ruediger (1905) concluded that the opsonins are relatively simple in their constitution, and that they possess a haptophore group by means of which they unite with the bacteria and an opsoniferous complex by means of which they act upon the bacteria to render them vulnerable to the phagocytes.

The opsonins found in normal blood-serum are generally regarded as being of the nature of common antibodies capable of acting upon a variety of bacteria, as it has been found that absorption by one species of bacteria robs the normal serum of opsonins for other bacteria. In this respect the opsonins are similar to the agglutinins. The common opsonins of normal blood, however, are capable of replacing the specific opsonins of immune serum, as shown by absorption-tests.

On the basis of Ehrlich's theory of the mechanism by which the different forms of antibodies are elaborated, it appears probable that the opsonins resulting from stimulation of the body-cells through infection are specific for the particular bacteria causing the infection, so that recovery from infection by streptococci would result in the elaboration in the body of specific streptococcus opsonins.

The quantity of opsonins in an individual's blood, for a particular species of bacteria, may be increased by systematic immunization by the injection of appropriate doses of suspensions of the dead bacteria. There are, however, important limitations to this mode of immunization when applied to the control of infection already in progress. In protective inoculations of the bacterial vaccines, on the other hand, these limitations are inoperative, as shown by experience extending over a number of years.

The limitations to the use of bacterial vaccines in the treatment of disease are of a twofold nature, dependent upon (*a*) the nature of the bacteria causing the infection, and (*b*) the nature of the infectious process that is to be treated.

The study of the nature of the infective processes induced by bacteria and the character of the defensive operations which are manifested by the infected organism has revealed two principal types of infecting organisms: (1) Those in which the most prominent mode of defense exhibited by the infected organism is in the elaboration of antibodies which act independently of the body-cells, as exemplified in the destruction of the bacteria through the combined action of a specific amboceptor and the complement of the blood-serum. (2) Those in which the bacteria are destroyed by the phagocytic cells of the body through the intervention of the opsonins.

In those infections in which the body overcomes the bacterial action through the elaboration of specific amboceptors, or where this is the most prominent factor in overcoming the infection, it is evident that the administration of bacterial vaccines can not be so readily controlled by studying the opsonic index, as in this type of infections the opsonins and phagocytes apparently play a subordinate rôle in the destruction of the bacteria.

Therefore, in those infections in which the blood-serum acquires a bactericidal power of high degree, bacterial vaccines appear to be of limited value as therapeutic agents. The infections which fall into this class are typhoid fever, dysentery, and cholera.

Even in some of those infections in which the body overcomes the bacterial action through the elaboration of opsonins, the use of bacterial vaccines as curative agents is limited, as in diphtheria and tetanus, in which the soluble toxins produced by the bacteria are of far greater detriment than the bacteria themselves. In the other infectious diseases the use of the bacterial vaccines is limited by the extent to which the body has become invaded by the infecting bacteria.

Where the infectious process is localized or is pursuing a subacute course, the bacterial vaccines are most clearly indicated as therapeutic agents,

because, under these conditions, there is insufficient opportunity for auto-immunization, as the diffusion of bacteria or their metabolic products is insufficient to cause marked tissue-reaction and formation of specific opsonins.

In infections caused by this same group of organisms, where a large area of the body is affected, or there is a general invasion of the body and the infectious process is pursuing an acute course, the use of bacterial vaccines is contraindicated, because under these conditions the body is already overtaxed in its efforts to destroy the bacteria and their toxic products.

The infections in which bacterial vaccines are especially serviceable are those localized infections due to streptococci, staphylococci, pneumococci, and localized or incipient tuberculosis. Even in infections produced by these organisms, where the body temperature is considerably elevated, the vaccines are likely to prove harmful unless administered in very small doses, with careful observation of the effects produced by determinations of the opsonic index.

There has been considerable controversy between American investigators regarding the value of the opsonic index in determining the influence of the bacterial inoculations. Some contend that it is impossible to obtain concordant results in determining the normal opsonic index, and hence the value of the index as an indicator of the influence of the inoculations is limited. No one claims that absolutely concordant results can be obtained, but Wright and others claim that when the technique is carefully followed the results should not vary more than 10 per cent. It is probable that some of the variable results that have been obtained are traceable to deviations from the rules laid down by Wright for determining the index.

The results obtained by Dr. Hollister, of Chicago, in determining the tuberculo-opsonic index of normal individuals are of great importance in this connection. From 60 to 90 consecutive tests were made of the tuberculo-opsonic index in each of 20 normal individuals, and it was found that of all the tests made, with one or two exceptions, no three consecutive tests made on any individual varied more than between 0.8 and 1.2, usually lying between 0.9 and 1.1, and that when all the tests were averaged the final result was 1.0. From the results of his investigations, Hollister concludes that when the tuberculo-opsonic index lies either below 0.8 or above 1.2 it indicates that the individual is suffering from tuberculosis.

In employing bacterial vaccines in the treatment of infections it is necessary, therefore, for the clinician to know definitely not only the nature of the organism causing the infection, but also the probable extent to which the body has become invaded. It is also necessary to bear in mind the limita-

tions surrounding the servicability of the vaccines as therapeutic agents, so that the inoculations are withheld in those infections in which they can, *a priori*, be of no service, or in which they may prove of positive detriment. It must also be emphasized that, judging from the experience of Wright and others, only by careful observation of the opsonic index can we learn the size of dose to be administered or the time when the inoculation may be repeated with safety to the patient.

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PROCEEDINGS OF THE AMERICAN PROCTOLOGIC SOCIETY.

The Ninth Annual Meeting was held at Atlantic City, N. J., June 3 and 4, 1907, the president, Dr. Samuel G. Gant, in the chair. The following officers were elected: president, A. Bennett Cooke, M.D., Nashville, Tenn.; vice-president, Louis J. Krouse, M.D., Cincinnati, Ohio; secretary-treasurer, Lewis H. Adler, Jr., M.D., Philadelphia, Pa.; and the executive council, J. Rawson Pennington, M.D., Chicago, Ill.; chairman, Samuel G. Gant, M.D., New York City, N. Y.; A. Bennett Cooke, M.D., Nashville, Tenn.; Lewis H. Adler, Jr., Philadelphia, Pa. The place of meeting for 1908 is Chicago, Ill., the time to be announced later.

The following were elected members of the Society: Dr. Jerome M. Lynch, of New York City; Dr. Jas. A. McVeigh, and Dr. J. A. MacMillan, of Detroit, Mich.

The following is an abstract of the principal papers read:—

PRESIDENT'S ADDRESS.

The president, Dr. Samuel G. Gant, of New York City, said that the annual meetings of the Society were like a post-graduate school where advanced information in proctology could be obtained by the members. He considered it unwise to admit to membership in the Society the general surgeon and young rectal specialists of less than five years' experience in this special work, because the membership would become too large and the papers contributed by them would not meet the requirements.

He maintained that the proctologist of the future, in order to be success-

ful, must have a thorough literary and medical education, a hospital training and clinical facilities, and that he must be clever, industrious, and persistent. He emphasized the necessity of educating both the profession and the laity as to the remarkably improved methods now employed in the handling of patients suffering from disease in the lower bowels. He also said it was the duty of the proctologist to demonstrate by his work and writing that most tubercular fistulæ were curable and that the curing of ordinary fistulæ did not tend to bring about lung or skin affections, as was formerly believed; that fæcal incontinence does not follow fistula operations, when the muscle is cut at a right angle and the wound is properly dressed; that many rectal diseases, such as fissures, ulcers, small fistulæ, and some hæmorrhoids can be operated upon under local anæsthesia; and that in the majority of instances, constipation and chronic diarrhœa are curable by local and surgical measures.

Finally, he emphasized the fact that the etiology of many discomforts, nervous and reflex phenomena, usually attributed to the genital organs, is frequently to be found in some pathologic process located in the sigmoid, rectum or anus.

REPORT ON PROCTOLOGIC LITERATURE FROM JUNE, 1906, TO JUNE, 1907.

Dr. Samuel T. Earle, Baltimore, Md., read his report on proctologic literature, covering a period from June, 1906, to June, 1907, in which he said: "that while there has been nothing startling in proctologic literature in the past twelve months, your committee is gratified with the steady progress in this branch of medicine and surgery, as has been reflected in the literature on this subject. Especially gratifying have been the recommendations for the radical treatment of carcinoma of the upper rectum and sigmoid, as set forth in the papers of Samuel G. Gant, W. J. and C. H. Mayo, and James P. Tuttle, in which they all recount the combined advantages of the abdominal and perineal routes, which we think will greatly lessen the likelihood of recurrences and increase the number of permanent cures. We note with pleasure the systematic efforts that are being made in the study of the etiology of pruritus ani. The paper of Wallace, of London, in 1905, on the study of this question stimulated the efforts of others in this direction, and we find an excellent paper by J. C. Hill, of Boston, on the same, in the Boston Medical and Surgical Journal, 1906. In this article, he takes the stand with Wallace that there is always cause for this malady, in which the pruritus is only a local symptom. We quote him as follows: 'Pruritus ani is the symptom caused by unnatural moisture or discharges, produced either by lesions about the anus or by congestion, or some pathologic condition in the rectum or sigmoid. It is due to one of five causes. First, and by far the most important are superficial ulcerations or abrasions of the anal canal. Second, catarrhal diseases. Third, external hæmorrhoids. Fourth, inflammation or irritation of the crypts of Morgagni. The free borders or valves of these crypts consist chiefly of nerve fibers, ganglion cells, and connective tissue. When inflamed or infected, they may give rise reflexly to pruritus ani. The writer calls attention to the teats

which project from the margin of these valves as accessory sense-organs. When hypertrophied or elongated they cause many distressing symptoms about the anus, viz., creeping, crawling sensations and itching. Fifth, small polypi of the anal canal.'

"It is not only necessary to remove the exciting cause of the disease, but also to direct appropriate treatment to the unnatural conditions of the skin. In this connection your committee is glad to be able to report a number of cases of the aggravated form of this disease, which had failed to respond to the usual local and constitutional methods, that were successfully treated by Dr. Ball's recommendation of dividing the anal nerves. These have been reported by Drs. Mattin and Earle.

"Dr. Charles B. Kelsey calls attention to the office treatment of hæmorrhoids by puncture with the electric cautery. The method is to make numerous punctures with a pointed cautery to the internal hæmorrhoids. This method has been used for the past ten years in lieu of that by injection, with most satisfactory results and without any unfavorable effect. For the details of the method, I would refer to his article in the Therapeutic Gazette for March 15, 1906. The reviewer would respectfully report with reference to this suggestion, that about ten years ago he tried it in a number of cases, but with only temporary success where the hæmorrhoids were large. It answered very well in small capillary hæmorrhoids. J. A. Hartwell, in the Annals of Surgery, Philadelphia, for 1906, Vol. 43, page 146, reports a case of resection of the rectum for syphilitic stricture, with end-to-end anastomosis. As might have been predicted, it recurred, and while it was necessary to continue dilating, he was not hopeful of results. Your committee would remind its members that such radical measures seldom accomplish the desired results, as recurrence is almost inevitable."

"Additional Experience with a New Procedure in Operating for Ano-Rectal Fistula,"

By Dr. J. R. Pennington, Chicago, Ill., who said: "I have found the employment of the seton in operating on cases of ano-rectal fistula greatly aids in preserving the contour of the anus and the functions of the sphincter muscles.

"The technique in using the seton is as follows: After all of the fistulous tracts external to the sphincter are divided, a probe-pointed director is passed into the bowel through the remaining tract and an incision made on its distal side. This incision should extend far enough distally to divide all or a part of the fibers of the external sphincter, and in such a direction as to locate the transferred internal opening at or near the anal margin. Then, turning the knife, make an incision—Salmon's 'back cut'—on the proximal side of the tract. A seton is then passed through the opening, entering the bowel, and tied loosely around the tissues remaining and undivided.

"The wound is dressed as after the ordinary incision operation for fistula. At the end of twenty-four to thirty-six hours the wound is re-dressed, care

being taken to dress it so that the opening entering the bowel will be made to heal from the proximal toward the distal side. The object in doing this is to advance the final fistulous tract as far distally (toward the skin) as the case will permit, so that, if possible, it will pass through or distally to the fibers of the external sphincter, when the healing process is complete.

"As a rule, the enlarged tract entering the bowel soon closes, with the exception of the part through which the seton passes. As soon as this has occurred the seton may be removed, and by the time the external wound is healed the tract entering the bowel will possibly have closed also. Should it not, at any time later this little tract may be dissected out and the remaining fibers of the muscle sewed together, thus preserving the contour of the anus and the functions of sphincters."

"Occult Hæmorrhoids from the Rectum."

By Dr. William M. Beach, Pittsburg, Pa., who stated: (1) Occult blood in the stool indicates disease high up in the gastro-intestinal tract. (2) Accompanied by certain rational symptoms, as pain localized, the origin of occult blood can be noted. (3) The discovery of blood in the stool may enable us to predict hæmorrhage or prevent disaster. (4) The most frequent sources of occult blood are, in the order named: stomach, duodenum, and caput coli. (5) The aloin-turpentine test, as practiced by Dr. J. Dutton Steele, of Philadelphia, is recommended. (6) Proctocologists should make an examination for occult blood a routine practice in cases of anæmia accompanied by diarrhœa or constipation.

"Etiology and Symptoms of Fissure,"

By Dr. C. F. Martin, of Philadelphia, Pa., who said: "The fissure is usually situated posteriorly and directly over the 'white line' of Hilton, due to the arrangement of the fibers of the external sphincter and to the fact that the anal canal has less elasticity directly over that line. Most fissures start as the result of the distension of the canal by hard fæces and excessive straining at stool. Those situated anteriorly are often seen after confinement, due to the pressure of the fœtal head upon the perineum.

"The sentinel pile is noted in most cases if the fissure has been present for any length of time. It is a simple inflammatory hypertrophy. Hypertrophy of the anal papillæ does not appear to be an important factor in the causation of fissure. True hypertrophy of the sphincters is rarely seen, but in its place we find an excessive irritability of the external sphincter.

"The distinctive symptom of this disease is pain, or sphincteralgia, preceded by a 'pain interval' of from one minute to an hour, during which time the patient has comparative comfort. The pain is caused by spasm of the sphincter compressing the nerves in the ulcer. This contraction interferes with the perianal circulation, and renders the inflamed nerves more sensitive. The 'pain interval' is caused by a temporary improvement in the perianal circulation produced by the straining efforts at stool.

"The constipation of fissure often precedes the formation of the ulcer, an irritable sphincter being the underlying factor in the production of this condition. The constipation increases after the formation of the ulcer, due to the fear of the patient of the pain following stool.

"The treatment consists in the divulsion of the sphincters and the usual stimulating after-treatment. The sentinel pile should be removed at the time of divulsion. Division of the external sphincter is not advised, for frequently it does not unite and eventually atrophies. Fistulæ, abscesses, and fæcal impaction are mentioned as frequent complications of fissure, and call for appropriate treatment."

"Local versus General Anæsthesia in Rectal Surgery,"

By Dr. G. B. Evans, Dayton, Ohio, who stated that "Pain naturally is the common curse and dread, though relatively essential, of the human family.

"The law of self-preservation, when an individual is threatened with pain, is at once a law of resistance, manifest by intense expectancy and defiant attitude.

"The shock incident to the terror of pain is incomparable to that which is likely to follow an abbreviated use of a general anæsthetic. In consideration of the evolutionary plane occupied by the average American of to-day and the more remote period of his removal from the gorilla peripheral sensibility of the jungle, we are forced to conclude that he is more sensitive, and in need of greater consideration for the relief of pain. Because an operation can be done painlessly, it does not follow that there will not be subsequent suffering and some and perhaps severe shock.

"But in this nerve-block period of Creile and Pennington, and the Gant period of dermal and subdermal distension, we are told there is scarcely any use any more for a general anæsthetic. Do we not believe as proctologists that in our operative field sensibility is most difficult to abolish, and would it not naturally appear that more narcosis is necessary in this kind of surgical work and as a consequence more shock? Again, would it not be possible, by the combined use of general and local anæsthesia, less shock would ensue and more operations could be made with success? I believe that by using the local anæsthetic preceding the general anæsthesia we lessen the amount of the general anæsthetic appreciably, diminish the dread and fear, and consequently diminish shock and danger thereby. Therefore, the combined method of narcosis, less anæsthetic, suspending shock incident to conscious dread, as well as anæsthetic shock, rendering more complete operative area—consequently more satisfactory work. It is simple to operate upon prolapsing piles, but not so simple to operate upon piles above the sphincters, yet demanding operative interference.

"The injections of sterile solutions disturb the parts anatomically. The frequent punctures through the tissues invite infection, and infection trouble. You can never measure the nerve and seldom the surgical all of your patient. Its chief advantage is that occasionally you are able to do work in your office, and even then unsatisfactorily.

"I fail to see the advantage of operation under local anæsthesia in your office and follow your patient home and give hypodermic of morphia, over the usual custom of operating at home in the first place.

"An operation for hæmorrhoids is a matter of some seriousness—often attended by some shock, often bloody—and the greatest caution should be observed that asepsis be obtained.

"I do not think it best for our patients that general practitioners should be taught that aseptic precautions at the time of operation and rest at home for a few days are unnecessary. Do we not magnify the applicability of local anæsthesia, will not accidents occur, are we not sacrificing perfect scientific work, are we not belittling our chosen work—a class of operations that are important and not free from danger?"

"The Sigmoidal Factor in Constipation,"

By Dr. E. A. Hamilton, Columbus, Ohio, who said: "In a certain percentage of intractable cases of constipation, organic change in the wall of the sigmoid is the controlling factor. This change is entirely independent of any disturbance which may occur on the outer surface of the viscus, *e.g.*, malposition and pathologic flexures due to adhesions. The change in the gut occurs in the submucous and muscular coats and consists of a round-cell infiltration of these coats which subsequently contracts, thereby to a greater or less degree narrowing the lumen of the bowel. The round cells change into spindle cells, subsequently undergoing a metamorphosis into true connective tissue. The contraction of this connective tissue so narrows the caliber of the sigmoid that constipation of an obstinate type must result. This change is not always limited to the sigmoid; it frequently involves the descending colon as well. In addition to the contraction of the gut, it loses also its resilience, which further adds to the difficulty of the passage of fæcal debris. The etiologic factor is the absorption of bacteria and toxic products from the sigmoidal contents. The mesentery is also involved and is thickened and shortened. The whole process is chronic, several years being required to bring on the condition. Surgery offers the only relief. An anastomosis must be effected by any suitable surgical procedure between the unaffected portions of the intestinal tract above and below the lesion."

"A Report of Two Cases of Sigmoidopexy,"

By Dr. S. T. Earle, Baltimore, Md., who said: "In one of the cases there was the third degree of prolapse of the rectum, the invagination of the upper part into the lower portion of the rectum. In the other case there was a very acute flexure of the sigmoid upon the rectum. Both of the conditions, as is well known, are frequently due to an abnormally long meso-sigmoid. The symptoms in each case were obstinate and persistent constipation, frequent bearing-down pains in the lower pelvis, a sense of weight, and especially a feeling of unrelief for some hours following a stool or an attempt at the same; associated with these local symptoms were darting pains in various parts of the

body, nausea, anorexia, frequent headaches, and the various neurotic symptoms that go to make up a typical case of neurasthenia. The case of invagination was diagnosed positively by a digital examination while straining at stool, the sulcus being distinctly felt with the finger; the case of acute flexure was diagnosed by means of the protoscope, the flexure being so acute that it was only possible to enter the sigmoid with the protoscope by getting the end of the latter around the flexure, and pulling it aside. The flexure was so acute that it obliterated the lumen of the bowel at this point. The technique of the operation is such as is given in Tuttle's and Gant's works on 'Diseases of the Rectum and Anus.' I met with no special difficulty in performing the operations. The meso-sigmoid was very long in both. I was particular in pulling off the abdominal peritoneum where the sigmoid was to be held in apposition, and also in attaching the sigmoid to the transversalis fascia. Both cases made good recoveries, except that one was retarded by a stitch abscess. The results in both cases were most satisfactory and pronounced, with almost immediate relief of the persistent and obstinate constipation, with the gradual disappearance of the neurotic symptoms. Dr. Gant has recently reported a number of sigmoidopexies and colopexies with most satisfactory results.

"Dr. Clark, in a paper read before the Medical and Gynæcological Sections of the Medical and Chirurgical Faculty of Maryland, on February 15, 1907, called attention to the frequent associations of gastroptosis, floating kidney, and enteroptosis in the same individual."

"Fæcal Impaction."

Dr. Lewis H. Adler, Jr., of Philadelphia, Pa., in a paper entitled "Fæcal Impaction," called attention to the result of obstipation, or an attack of constipation causing an accumulation of fæces in the cæcum or in any part of the colon; but the term impaction—the subject of the paper—should be usually employed when such an accumulation occurs in the pouch or ampulla of the rectum, or in the sigmoid flexure.

Attention was called to the difference between an ordinary persistent constipation and an impaction, as the latter may follow from a single attack of constipation; whereas obstinate constipation may never, only after a long period, cause impaction. The symptoms of the two conditions are also very different, as an impaction is usually marked by a diarrhœa, whereas chronic constipation is associated with costiveness. After calling attention to the various causes of the malady under consideration and the symptoms of the same, the treatment was detailed as consisting primarily in the removal of the mass, and secondarily in the relief of the inflammation of the mucous membrane occasioned by the irritating presence of the fæcal matter, as well as the removal of all causes which contribute to the constipated habit, which is undoubtedly the prime factor in most cases producing an impaction.

The easiest manner of breaking up the fæcal mass is to put the patient under an anæsthetic and then to forcibly divulse the sphincters, after which the mass may be disintegrated by means of the finger, a lithotomy scoop, or an

old-fashioned iron spoon. In women considerable assistance may be rendered by passing a couple of fingers into the vagina, and by this means steadying the mass so that it may be the more readily broken.

In some instances the writer was able to break up an impaction without resorting to anæsthesia, simply by using the finger and sometimes by the additional use of a bivalve speculum and a rectal scoop or spoon.

Previous to resorting to instrumental aid in the removal of the impaction, the fæcal mass may be softened and its passage facilitated by the use of enemas; especially is this so in cases in which the sigmoid is the part affected, in which situation material assistance cannot be gained by the employment of instruments. For the purpose of administering the injection a douche-bag holding several quarts is to be preferred. The injection substance should be composed of soap and water, to which I have found the addition of glycerine of considerable benefit, a dessert-spoonful to a quart. When the impaction is in the sigmoid, the injection should be given through a Wales bougie—preferably the one modified by Dr. Dwight H. Murray, of Syracuse, New York, which is stiffer than the ordinary article sold; which latter is frequently useless for the purpose intended, as it readily doubles on itself, and a high injection is rendered impossible by its use. When this method is employed the patient should be placed in the knee-chest posture.

A word of caution should be given here as to the danger surrounding the unguarded use of drastic purgative drugs in cases of impaction. By their employment peristalsis is increased and the fæcal mass softened, but the bowel in its inflamed and distended condition may be thereby the more easily ruptured, and if, in addition, a stricture is present, the caliber of the gut may be entirely occluded by forcing into it the hard fæcal mass, with the attendant symptoms and consequences of total obstruction of the intestines. So much for the treatment of the actual impaction.

"Pruritus Ani: Is it a Disease per se or Merely a Symptom?"

By Dr. Louis J. Krouse, Cincinnati, Ohio, who quoted from the works of Bodenhamer, Agnew, Wright, Ball, Crepps, Gant, Matthews, Tuttle, and others their opinions regarding the etiology of this disease, and then stated: "Pruritus ani essentially is a disease which is due not to a local, but to a constitutional cause, and is due to some trophic changes in the nerves supplying the parts." He further stated that the changes occurring in the skin of the anus and surrounding parts, namely, the hypertrophy, the loss of pliability, and the absence of pigment, can only be explained on the faulty nervous supply of the parts. He showed that an increase of pigment ought to accompany severe itching, and not a total disappearance, and finishes his article by saying that "the absorption of the normal coloring matter of the affected area does occur, notwithstanding that the epidermis was not destroyed," and said, "a similar process of absorption takes place in leucoderma. All authorities acknowledge that the cause of the latter disease is to be found in the nervous system," and concluded with the statement that "pruritus ani, at least in such cases, is a disease *per se* and not a symptom."

"The Treatment of Ischio-Rectal and Pelvi-Rectal Abscesses,"

By T. Chittenden Hill, of Boston, Mass., who said that he employed general anæsthesia, produced with ethyl chloride, for the ischio-rectal abscess, and ether anæsthesia for the pelvi-rectal abscess. His experience with infiltration anæsthesia has been unsatisfactory. He emphasized the importance of an early incision for peri-rectal abscesses, claiming that when acute symptoms have existed for a day or two, with pain and tenderness, even before there is much œdema or discoloration of the skin, long before fluctuation can be detected, an incision may prevent abscess formation by allowing the escape of blood or serous exudate from the engorged blood-vessels.

He advised a "T" incision and breaking up the existing septa with the finger, after which the sphincters are divulsed. He believed squeezing, scraping, or disinfecting an acute abscess to be a great mistake, as it only serves to destroy the new granulation tissue and to spread the infecting bacteria. For the deeper ischio-rectal and in all pelvi-rectal abscesses he recommended rubber drainage tubes, discarding their use as quickly as possible in the after-treatment. He believed that the great majority of pelvi-rectal abscesses should be reached by perineal dissection.

"Cryptitis,"

By Dr. J. Coles Brick, Philadelphia, Pa., who said: "The anal valves and crypts, first pointed out by Morgagni, and called after his name, are found as vestigial remains of the junction of the rectal mucous membrane with the skin. They vary in number and size, but are absent in the anterior and posterior commissures. They have no known functions, but are the cause of obscure symptoms, when diseased; and from the fact that the valve or covering part of the crypt may conceal the diseased area, repeated examination will fail to show the lesion, unless each crypt is probed, when tenderness or pain will be felt. A conical, fenestrated speculum is the best to use, and when the diagnosis has been made the valve should be removed and the crypt converted into a raw surface, so that healing will obliterate it."

"Observations on Certain Points in the Anatomy and Physiology of the Rectum,"

By Dr. A. B. Cooke, who expressed the view that the usual conception of the external sphincter muscle is erroneous—that under normal conditions it is not in a state of tonic contraction, but, on the other hand, is at rest and passive, the shape of the muscle and the arrangement of its fibers being such that the anal aperture is maintained in a state of passive closure. It is not conceivable that a voluntary muscle should require the constant action of nerve-force to keep it in a state of rest. The only action of this muscle is to voluntarily oppose or terminate the act of defecation by tonic contraction.

With reference to the internal sphincter, the essayist observed that there is no occasion to credit this muscle with any special action in addition to that of the circular coat of the bowel, of which it is a part. By reason of its

location and thickness, it probably exercises some passive sphincter control, but its chief action is undoubtedly that of a detrusor, serving to complete the expulsion of fæces and keep the anal canal free of contents.

The levator ani muscles, acting together, constitute the sphincter of the proximal extremity of the anal canal. To understand this it is only necessary to remember (1) that the upper or pelvic surface of these muscles presents a deep, funnel-shaped cavity, the beginning of the anal canal being at the lowest point; (2) the strong bundles of fibers which unite immediately behind the rectum arise in front from the pubis and anterior portion of the fascial line and pass downward and backward in close relation with the lateral walls of the rectum, crossing it obliquely at the upper limit of the anal canal.

The well-known difficulty of voiding urine while a costive stool is being expelled, which is usually attributed to the action of the levatores ani, is due rather to the pressure of the fæcal mass upon the prostatic and membranous portions of the urethra, since, at the time of defecation, these muscles, like the sphincters, must be in a state of relaxation.

The part played by the anal canal in defecation is purely passive, except at the completion of the act when the voluntary muscles which enclose it are strongly contracted, expelling any remnant of fæces and bringing its walls again into their normal relation when at rest of close apposition.

The essayist dissented from the commonly accepted teaching that there is an inhibitory center in the cord which presides over the action of the external sphincter, and which is called into action at the time of defecation to inhibit its tonic.

The relaxation which occurs at such times seemed to him fully explained by the mechanical pressure of the descending mass upon a structure which only offers passive resistance unless contracted by voluntary effort, and which possesses sufficient resilience, independent of any nerve influence, to regain its normal form and tone as soon as the pressure is removed.

(*a*) Dr. Dwight H. Murray, of Syracuse, New York, presented a new hæmorrhoidal clamp, which had the following qualities in combination, that make a first-class instrument, viz., scissors-shaped, parallel jaws; can be closed and released instantly without the use of a thumbscrew, thereby saving much time while operating. The Goodell dilator reversed is used as the ground principle for the lock.

(*b*) Dr. Dwight H. Murray, of Syracuse, New York, reported the case of a man, 48 years old, who had been troubled with sciatica in the right leg for two years and had also been a sufferer from hæmorrhoids for ten years, having frequent profuse hæmorrhages therefrom. The hæmorrhoids had not been treated. The sciatic nerve had been stretched and treated by various methods, by a physician at his home town, included in which was the following, completed in three sittings two days apart: At the first sitting, six hypodermic injections, $^1/_{150}$ grain of atropine each, were given into the sheath of the sciatic nerve. At the second sitting seven injections of the same amount, and at

the third sitting eight injections were given as before and one extra into the nerve before it leaves the pelvis. The patient was unconscious for fourteen hours after the last sitting. Very little improvement resulted.

In November, 1906, the author was first consulted, and on December 12, 1906, operated on him for internal hæmorrhoids. He made the usual recovery up to the ninth day, when there was a sudden profuse secondary hæmorrhage. The patient was almost exsanguinated before the author arrived. He immediately examined, found the superior hæmorrhoidal artery was throwing a full-sized stream. This was secured, the patient stimulated, and he made an uneventful but slow recovery. The patient has had no sciatic pain since the operation.

Dr. Murray concluded that inasmuch as sciatica is often symptomatic, that no severe treatment is justified until all possible reflex causes are first removed.

The cause of the hæmorrhage was probably due to the thrombus or eschar at the end of the vessel being thrown off before thorough healing had taken place, and was influenced largely by his general anæmic condition before operation.

Editorial

ARMY MEDICAL ORGANIZATION.

THOUGHTFUL citizens are constantly considering what may happen in the next war, which will come much like a thief in the night. The "chiefly fools," who are the bulk of our own people quite as truly as were Carlyle's compatriots, simply shout, "Where breathes the foe but falls before us!" Statesmanship must study the problem as a whole, and statesmanship is only the working aggregation of common sense. That manifestation of common sense which especially concerns us is the relation of the medical profession to the armed force. It has two phases: the Medical Department of the Army as a permanent body, and the relation that the civil practitioner bears to the active army of the future. It would appear that with a competent medical staff whose advice is heeded and whose authority is defined, a properly disciplined army should preserve reasonable vigor when exempt from the casualties of action. Why did the regular army before Santiago make another report? The individual medical officers of 1898 were strikingly competent—one may say personally accomplished in their specialized profession. But for years the government had practised the utmost frugality misnamed economy, a cruel centralization, and had maintained a corps numerically insufficient for its routine duty even in peace. This corps was supplemented by "acting" assistants, engaged with no permanence of tenure and consequently with no assur-

ance of quality. When the trial came, some officers with special aptitude, some bearing with them traditions of the Civil War, developed into administrators. Some did not. With the best of intentions, the central bureau was overwhelmed because it had anticipated no deluge. It had no ark. It had not even a chart of the shoals, to say nothing of a record of breaking seas. How nearly it was ship-wrecked and the physical efficiency of the army destroyed, we need not recall. The Medical Department was insufficiently developed, it had no automatic authority, and it was looked on as, at best, a necessary evil. To continue this figure, the medical officers (misnamed surgeons) were regarded as life-savers to rescue the wrecked, rather than as pilots who should keep the fleet from stranding. A bill before the present Congress, looking to the better development of the Medical Department, carefully prepared at the War Department, urged by the Secretary, warmly approved by the President, reported favorably by the committees, has been ignored. To enact some such law would at least throw the burden of accomplishment upon the officials instead of retaining it, as at present, with the people. Why will not the medical profession as individuals encourage Congress to make effective such a well-considered measure, which has had expert official support at every stage?

It would be equally unprofitable to speculate as to when the next war will come or with whom, as to anticipate a particular earthquake. Nevertheless, wars and earthquakes will continue to threaten, of which the former may sometimes be averted, sometimes mitigated, by intelligent preparation. Wars increase, not in ferocity but in abruptness, in magnitude, and in subsequent penalties. There is no time for improvisation and little value in what is improvised. A disciplined army corps once landed on this continent (no impossible feat) could march at will a hundred or a hundred and fifty miles into any city of the Atlantic slope. The navy being over-matched or eluded, a succession of such corps might easily live upon the country until overwhelmed by numbers. The only possible immediate interference would be the mobilization of highly organized volunteers. Leaving the creation of an army to others, we, of the medical profession, should insist upon equally essential agencies, viz.: medical organization—the basis of economy. It is easy to be too late, as no one knows better than the physician. The essential function of the Medical Department of any army is to maintain its health, its integrity, its efficiency. The cure of disease is altogether secondary; the question of surgery is trifling. Before there can be surgery there must be hostile contact; and, should the vitality of the military body be extinguished, as at Walcheren, before Sebastopol, or near Santiago, there can be

no successful operations. Indeed, a Camp Thomas or a Camp Alger may weaken the offence, or the defence, out of all proportion to its estimated capacity for service. One problem is, how should a competent volunteer medical corps be constituted, and what is the public duty of every qualified man? This is not a matter to be deferred until the danger is at hand, nor is it something to be transferred to our neighbors. The impending duty is none the less real because no alarum sounds at this very moment. One does not wait for an electric storm before erecting lightning conductors. The medical profession constitutes the main line, the real basis of public defence; but this is unavailable in its isolated, individual capacity. Nevertheless individuals can determine for themselves the discharge of a duty which investigation may show to be greater in form and importance than they now suspect. To elaborate a general scheme, which, to be effective, must be simple as well as complete, requires an essay, not a few paragraphs. To carry it out presupposes cordial coöperation by the active profession. And this is the plea now made. Because a physician's business as a means of support is distinctively personal and every day of absence diminishes his hold upon the community, it requires a high grade of patriotism for men established in and depending upon their profession voluntarily to render military service. This does not mean that it is any particular sacrifice to practise medicine or surgery in hospitals where the disabled are brought to the medical volunteer. Nor is it much more to be attached as free lances to a Red Cross organization and serve for a week or two in active surgery on the skirts of a great battlefield. Either is a minor matter. The essential thing is willingness to enter the field and patiently to discharge assigned duties, whether acceptable or not. It is required to learn in advance the theory, if not the practice, of preventive medicine as applied to masses of men themselves unfamiliar with military conditions; and, more important, to cultivate a docile mind as well as a presumably patriotic spirit. For the essence of patriotism is willingness to sacrifice self for country, as truly by yielding one's will as in risking one's body. That "the meek shall inherit," when rightly interpreted is a military precept as well as a spiritual tenet. As we see it, the first and immediate duty for every able-bodied physician under forty-five is seriously to resolve to put himself at his country's service in war; to study the principles of sanitation applicable to the man and to the multitude; and after weighing all the conditions as far as possible, to decide now that he will then take the field; and when the call does come actually to go at once. This requires intelligent prevision as well as fortitude; a disciplinary state of mind, making a constant oblation of what the impetuous

may tender under impulse and regret at leisure. It implies a high grade of resolution, but not higher than the spirit our profession should always exhibit. Those who interpret their duty in this way will equip their minds, as well as maintain their spirit, to discharge the plain obligation.

ALFRED A. WOODHULL.

THE MEDICAL OFFICER OF THE STATE FORCES.

IN a country which is dependent for the expansion of its military force in time of war upon civilians, who are then called into service, the development of an efficient militia is of the highest importance; and the most important element of such a force is the medical officer. The ignorance which prevails among the profession as to the essential qualifications of such an officer is appalling. This subject has been taken up fully in the writer's prize essay on "The Training of the Medical Officer of the State Forces to Best Qualify Him for Local Service and for Mobilization with National Troops," published in *The Military Surgeon* for July, 1907. The lack of suitably trained medical officers has been the cause of serious difficulty at the outset of every war. It was hoped at the time of the opening of the Spanish-American War that, owing to the presence in the community of a considerable number of physicians who had been connected with the various State military forces, much difficulty of this kind could be avoided. But the result did not justify this anticipation. Many militia medical officers declined to accompany their commands into the field and resigned, so that a large proportion of the volunteer medical officers were men without even the small military training obtainable in connection with the National Guard. Nearly all of the volunteer medical officers came into the service entirely without appreciation of the special preparation necessary for military medical service. Many of them, not content with regimental service, sought, through political channels, appointment to administrative positions and became brigade and division surgeons, in which positions they displayed a lack of knowledge so great as to materially impair the administration of the medical department. Had the profession realized that military medicine was a specialty which could not be undertaken without due study and preparation, and had men possessing such qualifications been placed in all the strategic points of the new army organization, much friction, a large portion of the mortality, and the humiliation of the medical department might have been avoided.

Military surgery—by which is to be understood, not the specialty known as surgery, but all of the phases of medicine, surgery, and hygiene, as modified

by conditions inherent in military service—is a specialty not to be lightly regarded nor ignored. In order to become qualified for the practice of this specialty, the medical officer must master the subjects of military medicine, military surgery in its limited sense—and military hygiene, all of which have been the subjects of extensive study upon the part of qualified authorities, and all of which materially differ in many respects from the medicine, surgery, and hygiene of civil practice. The regular army medical officer is subjected to a careful course of instruction at the medical school established by the government especially for the purpose of qualifying him for his special service. Moreover, in his daily military life the special military features of his work become ingrained into his being so as to form a part of his very existence. The physician who is given a commission as a medical officer of the militia, National Guard or other State forces should not make the mistake of considering himself qualified without study or practice to perform duties which the regular officer learns only by severe study and close application reinforced by much practical experience.

Of the three principal professional topics included under the specialty of military surgery, the most important is military hygiene, as is shown by the fact that fully half of the military medical literature, as listed from month to month in the *Index Medicus,* relates to military hygiene. The proper application of hygiene in the military service involves a departure from the methods of civilian practice, so marked as to involve a reversal of many of the civilian physicians' habitual methods, a point which emphasizes the necessity of its careful study. The prophylaxis which is the aim of all hygiene is the most important feature of the work of the military surgeon, taking precedence far and away ahead of attendance upon the sick. The ordinary civilian practitioner who is not engaged in the public health administration of his community pays little or no attention to this feature of medical work. The proper prosecution of this department of professional endeavor demands a close acquaintance with many phases of science not ordinarily understood.

Of military surgery, which has been magnified by public misconception into the chief feature of the military surgeon's work, the general practitioner has much to learn, a fact which is equally true of the surgeon experienced in the elaborate facilities afforded by the modern civil hospital. The haste, noise, and dust of the battlefield are complications second only to the enormous pressure of surgical work succeeding to a hostile engagement which modify all of the environments and many of the procedures of surgery. Military medicine, too, is in its turn subject to numerous deviations from the home practice of medicine. Overlapped here and there by military adminis-

tration, and in turn overlapping military hygiene, its successful practice is, to the civilian practitioner, like stepping from one field of labor into another.

But above and beyond all, medico-military administration is of importance for the medical officer—above and beyond all because this important department of the military medical officer's work is entirely foreign to and entirely ignored by the civilian practitioner. In a paper recently written by a distinguished physician, who was a regimental surgeon in a command of which the writer was the chief surgeon, it was stated that "the regular army officers seem to care for nothing but regulations and paper work," showing that this distinguished gentleman, who served only a few weeks in the field, never came to appreciate the fact that the army medical officers recognized in him an entirely competent physician and surgeon, who was conspicuously deficient however in the administrative side of his work, and in their instructions to him directed particular attention to the obvious defect. A tendency has been observed among the medical officers of the State forces to adopt somewhat similar views, although a very large number of them are entitled to the highest credit for their active interest in the military side of their profession; to them only credit and appreciation are due. But to the large, unfortunately large, number who regard a commission simply as a stepping-stone to professional advancement or as an excuse for periods of irresponsible recreation, the necessity for proper qualification for military medical duties is emphasized. The medical officer must become deeply acquainted with the proper methods of selecting recruits. He must be able to control his men, commanding the respect, not only of the hospital corps, but of the sick under his direction; he must be an authority beyond dispute upon camp location and organization; he must understand the principles and practice of field hospital construction and composition; he must have experience in the instruction and drill of the sanitary soldier; and he must be prepared to protect his service and assist his comrades by a thorough acquaintance with the records of his department.

This applies particularly to the medical officers of the military forces equipped and maintained by the great majority of our States. The theory of the organization of these bodies of troops is that they shall form a nucleus for the volunteer bodies upon which the nation depends for the enlargement of her armies in time of war. The complete and proper instruction of these troops, so as to enable them to coalesce naturally and readily with the regular army, demands that all the units composing them shall be fitted for service along the lines of the nation's military methods. The line officers of the militia appear to understand this, but it has been difficult in the past to

impress the fact upon the medical officers, accustomed, as they are, to the independent and competitive methods of civil practice. This perhaps accounts somewhat for the failure of the medical department of the State troops to operate to the best advantage when called into active volunteer service. It certainly is a most important factor in producing unfortunate results, and a full appreciation of the facts that military surgery in its broad, not its restricted, sense is a specialty worthy of the deepest study upon the part of officers entering its medical department, is essential to the avoidance of serious results in the case of all future hostilities.

It is hoped, then, that a public opinion in the profession and out of it may be created which will impel the selection of medical officers of the State forces for their ability, for their actual interest in military surgery as a special branch of medicine, and for their willingness to engage in the studies necessary to qualify themselves for the performance of their duties. If this be done, one of the factors liable to produce a high mortality and widespread sickness in the troops of another war may be avoided.

JAMES EVELYN PILCHER.

TWO EDITORIALS are presented to our readers in this issue which should serve to emphasize the dignity, importance, and paramount cogency of the medical arm in war and the prevention of war. The efficiency of an army or navy rests wholly upon the health of the unit, the individual man of war.

In proportion as a nation is known to be fully prepared to maintain the efficiency of the individual, insofar will it be recognized as powerful, hence to be attacked or let alone. If a nation is equipped with a perfect system of medical preparedness, and if also adequate authority resides in the officers, enabling it to maintain this power at all times, it will remain well in advance of another nation, altogether irrespective of the fighting force which can be opposed to it.

It is preëminently necessary for citizens to be and remain acutely alive to this fundamental factor in peace and hence prosperity, and that they shall omit no efforts to secure and hold such position of advantage.

One factor remains conditioning the integrity of the above postulate, viz.: the habit of implicit obedience of the unit. All the world knows that individual disregard of constituted authority can, and too often does, set at naught (fatally) the utmost wisdom of those in the post of responsibility.

With the first we, of the profession of medicine, can and should deal unflinchingly and systematically. With the second, we can do something by wise, emphatic counsels.

Who can deny that the chief defect in our citizens is an overconfident independence of spirit which, during national incipience, furnished that vigorous initiative whereby we prevailed, but which, inadequately modified in accord with concrete needs, grave exigencies, is capable of nullifying much of the good that our forefathers died to provide us?

Shall we again fail at the point which enabled Japan to outdo all other nations, viz.: by inability to control the suicidal acts of headstrong soldiers and too often officers? It is time we realized and corrected this apparent moral weakness, this habitual lack of self-restraint. J. M. T.

THE NUTRITION OF MAN.

THE dietetic vice of a century ago was alcoholic in kind; those were the days of the "three-bottle men." We of to-day undoubtedly eat too much, especially too much meat. That this is so Professor Chittenden well maintains in a valuable book[1] (his second on the subject), in which are detailed exhaustive experiments made during six years past by him and his colleagues at Yale. There is much scientific light thrown in this work upon the perplexing problems of nutrition. His thesis is that of the three sorts of foodstuffs—the proteids, the carbohydrates, and the fats—it is particularly the first which are eaten in too great quantity; the proteids should be cut down at least one-half.

There has been much investigation of nutrition in recent years; and among the standards which have found pretty general acceptance are those of Voit and Atwater. Voit found that a dietary providing 118 grams of proteid and 3,055 calories is required daily by the average man (weighing 70 kilograms) if he is to do moderate work. Atwater's standard, which was published in an official bulletin of the United States Department of Agriculture, demands 125 grams of proteid and 4,150 calories. Chittenden holds that 60 grams of proteid and 2,800 calories are sufficient to maintain the body in health and strength, in the highest degree of efficiency, both psychic and physical, and with the least expenditure of vital forces and of time. And he submits that a dietary based upon the following would be ample to this end: For breakfast, one shredded wheat biscuit, one teacup of cream, one water roll, two one-inch cubes of butter, three-fourths of a cup of coffee with the remainder cream and one lump of sugar; for lunch, one teacup chicken soup, one roll, butter as at breakfast, one slice of lean bacon, one small baked

[1] "The Nutrition of Man," by Russell H. Chittenden. The F. A. Stokes Co., New York.

potato, one rice croquette, two ounces of maple syrup, and one cup of tea with a slice of lemon and a lump of sugar; for dinner, one teacup of cream of corn soup, one roll, one-inch cube of butter, a small lamb chop, broiled, a teacup of mashed potato, apple-celery-lettuce salad with mayonnaise dressing, one cracker split, one half-inch cube American cheese, one half-teacup of bread pudding, and a demitasse with one lump of sugar.

All will not agree with Chittenden; in one position he is, however, impregnable—that in eating too much considerable energy is wasted in getting rid of an unassimilable food surplus. This dictum is very apt, indeed, with regard to the dietary in tuberculosis. Of course, the organisms of most consumptives are half-starved by the disease; and they need all the nutrition they can properly metabolize. But superalimentation is certainly a mistake. And Chittenden furnishes the reason why, in urging the consumptive to eat more than his tissues can assimilate, we, instead of benefitting him, are actually adding another to the many untoward conditions with which he must contend. The consumptive should be generously fed; but it is worse than error to gorge him.

Chittenden is decidedly no faddist. He is distinctly for a mixed diet. He would not have us vegetarians, though many individuals would do very well indeed upon a non-meat diet. He would not have us altogether Fletcherites; although that wise man has counselled much that is salutary. The mouth is not intended for a funnel through which food may be poured into the digestive tract; food must be thoroughly masticated, for the stomach has no teeth—such observations as these are as sensible as they are pithy.

JOHN B. HUBER.

WHAT CONSTITUTES A PRACTICAL MEDICAL PAPER?

COMMENT is freely made on the character of articles appearing in medical journals. They are chiefly criticized as deficient in practical qualities; in failing to furnish definite information leading to the solution of clinical problems. This is true not only of those general in character, but also when written by, or for, those interested in specialties. Authors naturally, and perhaps properly, aim to achieve originality, to offer novelties in technic, in treatment, or to put forth the results of patient research. All this is as it should be, and the contribution to science thus recorded becomes a credit to the diligence and capacities of a most laborious group of observers.

There is an impression broadly prevalent, erroneous in my judgment, that it is not worth while for active practitioners, untrained in literary, laboratory

or hospital methods, to publish their experiences. When this is done, succinctly and clearly, especially when well systematized and grouped, there is thus furnished excellent data from which others may deduce generalizations leading to the establishment of truths.

There will never be a time when we can afford to ignore, when indeed we shall fail to profit largely by, what Sajous has so emphatically stated to be valuable scientific experimentation in the use of drugs. This experimentation is not that of a reprehensible sort, as may well be asserted of some kinds performed in the laboratory. It is the inevitable, the praiseworthy, attempt to test in mass the recommendations of those who have carefully formulated and made deductions from appropriate data.

It is essential that we put to concrete proof rational deductions, and upon the human being. Medical men are entirely willing to subject themselves to similar tests, as daily history shows. In many instances serious damage or death has thus resulted to themselves, sacrificing valuable lives. Not so when our patients are thus utilized; they are never tested so radically. If that vast army of intelligent, well-informed, careful practitioners with which America is furnished, yet who remain silent as to print, would keep accurate notes of their findings by placing them on record, they would aid greatly in elevating the position of medical science.

These men have the courage of their convictions. They use their best judgment. They are prepared to stand or fall in reputation upon their daily acts. Why should this not go toward adding to the sum total of knowledge? The aggregate presentation of so definite a subject as the observed effects of a powerful drug, or some well-attested preparation, *e.g.*, digitalin (Merck's Germanic), as has been so ably done by Henry Bentes, makes for conviction which has done much toward enabling me to save several lives. So of the use of thyroid extract, recommended by Sajous in bleeders, hæmorrhagic states, etc.

It seems to the writer that the most patent deficiency in our writings is the inadequate presentation of fundamental principles, in definite formulations. To be sure, the admirable custom is growing for authors to place at the end of an article a summary of conclusions. Many times this is the only part read; if absent, the subject is often slighted or woefully misconceived. It requires some skill and an orderly mind to pick out the tenable formulations, the acceptable conclusions. The subject is better presented by reducing these to definite headings.

In text-books this is seldom done as completely as it should be. What medical paper is most practical which states the proposition [illegible] is

the facts concisely, analyzes these clearly, estimates the underlying points, physiologic, pathogenic and other, accurately, builds up the argument logically, deduces conclusions: (1) those obvious or inevitable, (2) those reasonably certain, (3) those justifiably inferential, or (4) possible.

If treatment is the theme, it is well to proceed on much the same lines, giving various factors involved their due place. It is well to rehearse the outline of physiology of the organ or system under discussion, or the physiologic bearings of constitutional features in accord with the best light or one's own experience; treat the facts observed, in sequence, cause to effect; and finally to present personal views as to explanation of remedies or methods of application. If any special views are held, differing materially from those ordinarily prevalent, it is desirable to make the argument strong, based upon a sure foundation of physiologic truth, not merely current text-book statements. By this is meant not merely those views expressed in text-books on practice and the like, but derived from physiologists of ample certitude, or those who have fortified their knowledge by drawing from similar incontestible sources.

A large mass of otherwise good material is vitiated by arguments based upon the acceptance of statements of "authorities" who themselves, nevertheless, failed to sift the findings which are accepted and loosely reasserted.

The reading public want, they earnestly desire, practical articles. These need not be long. Brief citations readily suffice; but when employed, the utmost care should be exercised that the statements utilized are sound, and deductions logical. Much of the "experimental" work, at least laboratory findings, is of doubtful utility, until they again are revised by yet other and critical persons. Unless all defective experimentation is excluded, false conclusions are reached, misleading rules become perpetuated. One form of "practical article" is greatly needed (or certainly more of them), in which shall be portrayed well-defined verities, legitimate finalities, theorems, precise rules of guidance along the lines of exact biologic reasonings. To be sure, they may not be easily constructed, but are altogether possible. Credit, fame, rewards, would accrue in proportion as they should be well done. We have asked too persistently for novelties; let us learn also to welcome and appreciate sound reasoning on the wealth of data already in our hands.

The material from which "practical articles" can be constructed is plentiful. It is only necessary for the "reading public" to voice their demands, to make plain their approbation of accurate literary work and expect less good from the accounts of mere rarities.

J. Madison Taylor.

THE PRACTICAL BEARING OF DR. SAJOUS'S RESEARCHES.

Those of us who are close to Dr. Sajous and are familiar with the character and quality of his work on the Internal Secretions, are constantly asked: what relationship does it bear to Clinical Medicine? It will be the endeavor of the writer to make a brief and partial answer to these divers inquiries, and to show how definite are the keys which he offers to the solution of the everyday problems of practitioners.

A certain few shrewd men have already so utilized the suggestions contained in Volume I that they have succeeded in obtaining thereby valuable results, and some of them have promised to publish their experience, relating their cases. The subtitle of the book is "The Principles of Medicine," and it is on that feature it will be well to focus attention. Not only has the author thoroughly collated, sifted, and systematized the extant findings of the physio-pathogeny of the ductless glands, but he has demonstrated and formulated principles of action wholly his own. These are, in brief, that vital action is initiated and maintained by a domination of the noble organs by a definite system of control organs, consisting of the adrenals, thyroid, and the pituitary bodies.

To quote from Volume II (page 1113): After showing the generally despairing attitude toward therapeutics expressed recently by various leaders of medical thought, such as A. H. Bampton (Lancet, January 19, 1907); Frank H. Billings, that drugs are valueless as cures, with the exception of quinine and mercury; referring to Osler's "black, hopeless therapeutic pessimism" "applicable also to a large proportion of the medical men in our country;" Lewellys F. Barker's quotation or transposition from Voltaire, that "drugs of unknown physiologic action cannot be conscientiously set to act upon bodily tissue in disease in which we are ignorant of deviations from the normal," he (Sajous) makes the clear statement, abundantly proven in Volume I and exuberantly amplified in Volume II, that his conception "shows that functions of the first order are overlooked: functions which in pathogenesis and therapeutics play the leading part, and without which these fundamental branches must remain inscrutable."

A large part of the book consists of a presentation of reconciliations of much of our wealth of accumulated facts, which can then be retained provided they are winnowed judiciously; also he makes clear many original facts and principles whereby we can accurately interpret physiologic and clinical phenomena, hitherto obscure or conjectural, not only to select and apply remedies knowingly, but to predict the outcome with some certitude. The subject of the internal secretions in their relation to pharmacodynamics, pathogenesis, and therapeutics occupies over 600 pages.

It is safe to hope, possibly to assert, that clinicians will welcome the evidence, will employ these rules of guidance increasingly, and will, by the aid thus furnished, not only save many lives, repair many hitherto irremediable damagements, but be themselves stimulated to make further, deeper studies along these lines and report their experiences. We shall welcome and publish carefully prepared articles dealing with such researches, whether the product of the laboratory, the hospital ward, or above all, of bedside experience.

Nor do we expect that these shall be always in entire accord as to view. There may well be variants of opinion, of conclusion; but if these are shown to be the product of candid searchings accurately pursued and wisely elaborated, we shall doubly welcome all such material as the basis from which truth shall be ultimately deduced.

J. MADISON TAYLOR.

Cyclopædia of Current Literature

ACID INTOXICATION OR ACIDOSIS: A FACTOR IN DISEASE.

Lessened blood-alkalinity affects the whole alveolar process by setting up an irritation and inflammation of the coats of its arterioles and in the tooth-pulp (which is also an end organ), producing endarteritis obliterans, arteriosclerosis, and nerve-end degeneration. Disease of the terminal nerves and arteries causes absorption of the bone. The inflammatory process has been termed interstitial gingivitis; the bone absorption, osteomalacia, or senile absorption, although it may occur early in life. The change which has taken place in the blood, owing to excessive acidity, plays a very important part in the action of the heart, producing high tension. It is supposed to act directly upon the sub-endocardiac ganglia and also, by the irritation, directly through the coronary arteries and their branches to those ganglia situated in the muscular tissue. Acids in the system must also influence the vasomotor supply, causing contraction of the arterioles.

In the light of the author's researches, another factor must enter largely into the cause of the increased action upon the heart for systolic force, namely: endarteritis obliterans, arteriosclerosis, and nerve-end degeneration. Greater pressure is required of the heart to force the blood through the arterioles to their extremities. Other end-organs and structures of the body, such as the liver, kidney, eye, etc., are obviously predisposed to affection in the same manner, leading up to sclerosis of the liver, Bright's disease of the kidney, and degeneration of arteries in the brain. Kidney lesions, due to the eruptive fevers in children, are influenced to a great extent by a high degree of acidity in the system.

The effects of a high degree of acidity in the mother on the fœtus in producing arrest of development at the senile or first period of stress, causing deformities of the child, merit investigation. An abnormal degree of urinary acidity, extending over a period of nine months, accounts for many of the neuralgias,

toothaches, destruction of teeth by erosion, decay of the teeth and wasting of the alveolar process, skin diseases, and many other lesions so common in pregnancy which cease to trouble after birth of the child.

Mental strain due to overwork, grief, shock, etc., checks the secretions, causing an abnormal degree of urinary acidity, which eventually results in diabetes, Bright's disease, and arterial degeneration. There are many other lesions traceable to or influenced by a high acidity of the system. E. S. Talbot (Medical Record, June 1, 1907).

ACNE, TREATMENT OF.

The author suggests that the tendency to acne at about the time of puberty may be of intestinal origin, and in 94.9 per cent. of a series of 33 cases of acne occurring at this age he has found clear evidence of abnormal putrefactive changes in the intestine, as shown by the presence of an excess of indican, phenolcresol, etc., in the urine; this intestinal putrefaction may, he considers, be due to the peristaltic inertia common at about the time of puberty. Although further investigations are needed to demonstrate the causal connection between acne and excessive intestinal putrefaction, the author has, on the strength of his observations, tried the effect, in cases of acne, of drugs which have an antifermentative action and which aid peristalsis, and with this object has administered a combination of 1 gram of sulphur precipitate and 0.25 gram of menthol, given two or three times a day over a period of several months. In the 33 cases of acne mentioned, which included cases of acne simplex, acne pustulosa, and acne indurata, treatment on these lines was very successful, substantial improvement being seen in all the cases and recovery in many. In 1 case the medicine gave rise to diarrhœa with colic-like pains, but in the others there were no unpleasant side-effects. The first result of the treatment was that the stools became pultaceous and the output of phenol sank to 0.01, or at the highest to 0.07, as opposed to an average output of 0.101 grams which had been previously observed. With this fall in the output of phenol improvement began, and often in the first three or four weeks the acne papules were observed to more quickly disappear; during the next four to eight weeks, in all but 1 obstinate case, new papules appeared with much less frequency; and in 9 cases, after three months' treatment, no new papules formed. Some of the new cases have now been as long as eighteen months without relapse, and may be considered to have completely recovered. During the internal treatment, local treatment, although it was not altogether discontinued, was reduced to a minimum. Josef Kapp (Therapeutische Monats., March, 1907; British Medical Journal, June 15, 1907).

APPENDICITIS, ETIOLOGY OF.

From an analysis of 1000 cases of appendicitis with reference to the etiology of this affection, the writer found that in a large percentage of cases there was a short mesoappendix, causing fixation of the proximal portion of the appendix and leaving the distal part free. This tended to cause the appendix to fold on itself and interfered with the circulation—in short, the result of an anatomic angulation. Then there is the retroperitoneal appendix, and the appendix in which there is no sharp demarcation between the end of the cæcum and the beginning of the appendix. Appen-

diceal concretions play a small rôle, and so, too, does thrombosis of the artery of the appendix. Infection of the mucosa, inflammation of neighboring organs, traumatism, and some unusual gastronomic feat were noted as causes of appendicitis. In 4 cases the passage of a renal calculus operated as a cause, while in one case a gall-stone was found in the appendix, although foreign bodies played almost the least important rôle of the various factors. G. Crile (Ohio State Medical Journal, June, 1907).

BRIGHT'S DISEASE, THERAPEUTICS OF, BASED ON ITS ETIOLOGY.

All therapeutics, to be scientific, must have for the primary object the removal of the causative factors that are producing the pathologic conditions. There are three general subdivisions of the renal lesions classed as "Bright's," and each of these subdivisions is further subdividible, from both a pathologic and a clinical standpoint. Hæmorrhagic nephritis as such does not exist; the so-called hæmorrhagic nephritis is an occasional modification of the chronic parenchymatous change. Most renal lesions are noninflammatory processes and are due to overwork of these glands at a time when the nutrition is impaired. The one exception is in connection with the class known as an exudative or inflammatory process. Here all the phenomena of a true inflammation exist.

There are three well-defined causative factors which enter into the production of the parenchymatous group of lesions. These three factors, plus five others, enter into the production of the interstitial and diffuse group of lesions. Both the overuse and defective supply of the starches, sugars, and fats are important factors to be considered in the production, maintenance, and cure of these renal lesions. Nervous overstrain is an important factor which often acts indirectly in exciting and maintaining renal affections.

Treatment is to be directed both to prevent and to cure, and consists chiefly in the correct apprehension and removal of the causative factors. The successful management of this class of pathologic lesions calls for extensive and thorough knowledge of chemico-pathology and dietetics. Drugs are not in any sense curative; but when rightly used can be made to produce wonderful results by enabling nature to utilize successfully the natural food substances; thus nature can be made both to remove the cause and repair the damages. These renal lesions, when studied purely from the histologic standpoint, are incurable. Considered from the physiologic and chemical standpoint, a large percentage are curable. Viewed from this standard, it is difficult to see how surgical interference can, even in a limited degree, be made to remove the underlying factors; hence such measures cannot be classed as scientific. W. H. Porter (American Medicine, June, 1907).

CANCER, TRANSMISSIBILITY AND CURABILITY OF.

The heredity and congenital acquirement of cancer are subjects which require much more study before any definite conclusions can be formulated concerning them. In the light of present knowledge they hold no special element of harm, and the contagiousness or infectiousness of cancer is far from proved. Evidence to support the theory of contagion or infection is so incomplete and inconclusive that the public need not concern itself with it. The public need merely be instructed to apply the same precautionary measures as should be

brought to bear in the care of any ulcer or open wound. The danger of the accidental acquirement of cancer is far less than from typhoid fever, syphilis, or tuberculosis. In the care of cancer cases there is much more danger to the attendant of septic infection, of blood-poisoning from pus organisms, than from any possible acquirement of cancer. The communication of cancer from man to man is so rare, if it really occurs at all, that it can practically be disregarded.

In cancer, as in all other disease, attention to diet, exercise, and proper hygienic surroundings are of the utmost importance. It is local in its beginning, and, when accessible, it may, in its incipiency, be removed by radical operation so perfectly that the chances are overwhelmingly in favor of its non-recurrence. Once it has advanced beyond the stage of cure, in many cases suffering may be palliated and life prolonged by surgical means. While other methods of treatment may, in some cases, offer hope for the cancer victim, the evidence is conclusive that surgery, for operable cases, affords the surest means of cure. W. S. Bainbridge (Boston Medical and Surgical Journal, June 27, 1907).

CARBOLIC ACID GANGRENE.

Nine cases are summarized by the writer, all following common injuries with carbolic dressings, generally one-in-twenty strength of solution. In all, the original injury or sepsis was trivial in degree. The appearance of the gangrenous part in such cases is characteristic. The skin at first is dry, wrinkled, and grayish-white in color; later it becomes dark and more shriveled. At the junction of the living and dead tissue there is some hyperæmia, and eventually a line of demarcation forms. As it is difficult to tell how much is actually destroyed, it is proper to wait for the line of demarcation before amputation is performed. In no one of the cases the author has seen has there been any swelling of the proximal part, but such swelling has been described in some cases. The condition is, as a rule, similiar to a typical case of dry gangrene.

Various explanations have been given as to the occurrence of gangrene under the conditions mentioned. It may follow the use of solutions as weak as 1 or 2 per cent. strength. It has been suggested that some individuals have an idiosyncrasy, and are locally much more susceptible to the hurtful action of carbolic acid than others, and that in them stasis followed by thrombosis occurs more readily, and gangrene results. It is the fact that the portion which becomes gangrenous is generally a terminal part of the body—for example, a finger or a toe. That age, sex, and the physical condition of patients do not apparently influence the production of the condition is seen when it is noted that it occurs at any age, in either sex, and in those who are in perfect health. Patients should always be warned that carbolic acid is a dangerous substance, and personally the author deprecates the application of such a dressing to a finger under any circumstances. D. Wallace (British Medical Journal, May 11, 1907).

DIABETES, SURGERY IN.

A distinction must be made between diseases due to diabetes, and those that occur independently of the disease. All necessary operations for diseases not due to diabetes should be performed just as in ordinary patients. The ab-

normal products (acetone, diacetic acid, beta-oxybutyric acid, lactic acid) which circulate in the blood in diabetes do harm; (a) by injuring the tissues and making them prone to infection; (b) by acting as contributing factors in producing premature arteriosclerotic changes. Arteriosclerosis plays a very important role in producing diabetic gangrene. There are two kinds of diabetic gangrene: (a) that caused by changes in the arteries and veins; (b) that caused by the effect of virulent bacteria on weakened tissues. An effort should always be made to transform wet gangrene into dry gangrene. If more than three toes are affected, especially if there is any cellulitis, a high amputation is generally indicated. If the infection is progressive, a high amputation should be done. If in doubt about the site of amputation, a high amputation will give the best results.

If more than one gram of ammonia is excreted in twenty-four hours, operation had better be postponed until by careful diet the amount of ammonia is considerably reduced. The prognosis does not depend on the percentage of glucose in the urine, but on the degree of acid intoxication. A strict meat diet will reduce the amount of sugar, but it will often bring on fatal coma by increasing acidity. Sodium bicarbonate given before and after operation can do no harm and may do good. Ether and chloroform should be avoided as much as possible. All operations on diabetics should be performed as simply and as rapidly as possible. Joseph Wiener (Medical Record, May 4, 1907).

ETHER AND AMYL NITRITE, TOXIC ACTION OF.

From a series of experiments on rabbits with intravascular injections of ether, chloroform, and amyl nitrite, the authors find that ether, injected intravenously, is more toxic than chloroform. Its apparent greater safety when inhaled is probably due to the fact that it is more loosely combined and is eliminated more rapidly through the lungs. Its lower boiling point may have something to do with it. The toxicity of ether depends on concentration. Intravenously, two minims are fatal in medium-sized rabbits; as much as one dram can be given subcutaneously without lethal effects. By inhalation, the toxic dose lies between these extremes, although undoubtedly a much larger dose by inhalation carried on over an extended period of time is much less dangerous than a smaller dose entering the circulation suddenly.

Ether kills in one of three ways: (*a*) By direct cardiac paralysis; (*b*) by vagus stoppage of the heart; or (*c*) by vasomotor paralysis. Respiratory paralysis can not be the cause of death if artificial respiration is employed. Intravenous ether injections cause a fall of blood-pressure, from weakening the heart's action and stimulation of the vagus center. The vagus effect can be reduced by section or partially by atropine. But even with cut vagi there is still depression. Injection into the carotid causes convulsions, probably from irritation of motor centers, a fall in blood-pressure due to vagus center stimulation, anæsthesia, and often cessation of respiration. With the vagi cut, such an injection causes convulsions with great rise in blood-pressure, due probably to stimulation of the vasomotor center.

From this it seems that death occuring during the early stages of ether administration occurs under the following conditions: (*a*) Weakening of the heart by the direct action of ether; (*b*)

vagus center stimulation; (*c*) vasomotor stimulation and constriction of the arterioles. The same conditions are probable also with chloroform death.

The danger can be avoided by giving the anæsthetic sufficiently diluted, and this can be done more easily with ether than with chloroform; but the use of atropine, which partially, at least, prevents vagus inhibition, is also advisable. When circulatory collapse occurs in spite of precautions, the indications are to unload the heart of the blood containing the overdose of ether, to dilate the blood-vessels, and to assist elimination by artificial respiration if the respiratory action is weak. The quickest method is to use amyl nitrite early. As regards the objection that amyl nitrite still further depresses an already low blood-pressure, the author's experiments show that the increase in amplitude of the heart's pulsations more than compensates for the fall in pressure it produces. Moreover, a temporary fall in pressure is not nearly so dangerous as ether-charged blood remaining in and poisoning the heart.

Ether with 2 per cent. nitrite of amyl was observed to have much less effect on the respiration, probably on account of the dilatation of cerebral arterioles and better blood-supply to the respiratory center. Amyl nitrite was found to have little or no such beneficial effect in chloroform poisoning; in fact, chloroform with 2 per cent. amyl nitrite appears to be slightly more toxic than pure chloroform. Probably the chloroform becomes more firmly fixed in the heart-muscle than ether, and can not be so easily gotten rid of.

Sudden deaths following the subcutaneous injection of ether and chloroform for sciatica, etc., are on record. It is possible that in these cases the drug entered a vein directly. Experimental evidence indicates that ether really depresses the heart, and its apparent good effect when sometimes used subcutaneously as a cardiac stimulant is attributed by the authors partly to the pain produced and partly to its action as a vasomotor stimulant. Clinical analysis of the cases shows that most of them were not true cardiac failure cases, but rather vasomotor paresis conditions, such as shock, collapse, and asthenic states. W. Muehlberg and S. P. Kramer (Journal of the American Medical Association, June 22, 1907).

EXOPHTHALMIC GOITER, TREATMENT OF.

Although Graves's disease is recognized by the prominence of four symptoms, tachycardia, exophthalmos, goiter, and tremor, this symptom-complex may be incomplete in the developmental stage of the disease, and here the other symptoms are sufficient for the diagnosis. At the time of the first examination the degree of thyroid intoxication should be noted and the patient then placed, if possible, under one of the three clinical groups. The prognosis depends upon the heredity, the social position of the individual, the type of the disease, and its early recognition. All these conditions being favorable, with good care and perseverance, there is a fair chance of recovery in those patients classed in the first group or presenting a mild form of the disease. The more advanced cases stand a better chance of recovery by operation, but this must not be delayed too long when organic changes have already set in. Recent clinical and experimental data still further emphasize the general belief that overactivity of the thyroid gland is quite sufficient to explain the appear-

ance of the symptoms of Graves's disease and their disappearance after operation.

Thyroidectomy should be the operation of choice, as giving the best results. Death following operation is due to shock and the use of a general anæsthetic; therefore this should be placed in only expert hands and local anæsthesia employed when possible. The author considers that the introduction of the cytotoxic serum marks an important advance in the treatment of the disease, and perhaps may ultimately prove to be the only rational therapeutic method. J. A. Booth (Medical Record, June 15, 1907).

HÆMATURIA.

While it is true that the great majority of cases of hæmaturia originate in the kidney, the fact must not be overlooked that the bleeding is not always so distantly located. The microscope is the best means of detecting the corpuscle when intact; and the Schum benzidine test, when the corpuscle is fragmented and the pigments liberated. The differential diagnosis for blood and pigments other than those derived from the blood must be carefully noted by accurate testing. The "Florence" test, when showing the typical spermatic crystals, at once should direct attention to the region of the verumontanum.

Cystoscopic and x-ray examinations are absolutely imperative. The history of the case, the time of the bleeding, and in what portion of the urine it occurs are cardinal points in the symptomatic diagnosis; while the clinical examination of the urine for casts, parasites, and the various cellular elements at times found in the urine by all means should be sought for. E. P. Porterfield (St. Louis Medical Review, June 15, 1907).

HÆMOGLOBINURIC FEVER.

The author holds that hæmoglobinuric fever is always malarial in the human subject, and explains its pathogenesis substantially as follows: The primary blood-destruction is due directly to the malarial parasite, chiefly through the act of sporulation, possibly also by the production of a toxin, though this has not been demonstrated. The hæmoglobin thus liberated is carried to the liver, where certain receptors of the liver cells are capable of transforming free hæmoglobin into bile pigment. When these receptors are exhausted the deficiency is met by overproduction, and when the cell becomes overfilled some of these side-chains are cast off into the general circulation, where the receptor becomes an amboceptor, and meets the complement present in normal serum and the complete hæmolysin is formed. The nature of the complement is unknown, but certain facts throw suspicion on lecithin. It is highly probable that when the production of the hæmolysin is not too rapid there is formed at the same time an antihæmolysin that may exactly balance the hæmolysin without destroying it. So long as this balance is maintained no hæmolysis occurs; but should the balance be greatly disturbed by fresh malarial invasion, cold, fatigue, quinine, or other and probably unknown factors, hæmolysis and hæmoglobinuria occur. Under this exact equilibrium the patient is in a condition very similar to that of paraoxysmal hæmoglobinuria; a close relation between these two affections has been claimed by Sambon. It is possible that a slight and temporary loss of equilibrium may result in a lim-

ited hæmolysis, producing hæmoglobinæmia instead of hæmoglobinuria. Some cases of anæmia, cachexia, and post-malarial secondary fever can be explained in this way.

The author believes that this theory explains the occurrence of hæmoglobinuric fever during and after malarial infection, with or without the use of quinine; it explains why the malarial attack may precede by months the appearance of blackwater; why cold, fatigue, etc., may bring on an attack; why the hæmolysis does not always coincide in time with the sporulation of the parasites when the latter are present; it accounts in a measure for the complex relation with quinine and explains obscure anæmia and post-malarial secondary fever. Lastly, it coincides with the prevalent ideas of tropical physicians of an intimate relation between hæmoglobinuric fever and biliousness. W. H. Deaderick (Journal of the American Medical Association, June 1, 1907).

HAY FEVER, ETIOLOGY AND RECENT TREATMENT OF.

Four principal causes of hay fever, or hyperæsthetic rhinitis, are recognized by the writer: (1) A neurotic factor or an adynamic state of the nervous system, and calling for careful search for the cause of nervous irritation and generally a tonic treatment; (2) pathologic conditions of the nasal mucosa, arising from the presence of polypi, deflections, hypertrophies, etc., attention to which may cure the disorder; (3) lithæmic or uric acid states, or intestinal autointoxications, calling for special treatment for these conditions; (4) dust, drugs, perfumes, animal emanations, and many pollens. Some individual predisposition is evidently essential to the development of hay fever from these causes.

The question how much the other above-mentioned causes influence the predisposition to be affected by pollen toxins, etc., is suggested by the writer, who also discusses the effects of suggestion in the treatment by his extracts of golden rod and ragweed and the pollantin of Dunbar, and publishes the replies of a number of prominent physicians to letters asking their experience with the remedies. These illustrate, he says, the difficulty of obtaining statistics from a number of widely separated experimenters.

His own conclusions are given as follows: Hay fever is a disorder amenable to no specific treatment. The number of cases of hyperæsthetic rhinitis from other causes than ragweed and other pollens is about one-third of the total number. About one-third of the cases supposed to be due to pollen reaction may be relieved by constitutional and surgical methods of treatment. Predisposition to attack in these being due to definite causes, would suggest the theory that induced enervation of the sympathetic is an important etiologic factor. Primary intoxications may take place from pollen toxins in cases in which the sympathetic system apparently is not previously enervated. These cases, theoretically, should react to antitoxin treatment. The consensus of opinion today is against the claims made for pollantin, though observers who have been instructed personally by Professor Dunbar indorse unqualifiedly the great benefit to be derived from the treatment.

The suprarenal capsule products hold the first place to-day in the treatment of hyperæsthetic rhinitis. The employment of constitutional treatment as an

adjunct to any local application is of supreme importance. The best of all treatments yet found is the climatic, with previous attention to nasal conditions. H. Holbrook Curtis (Journal of the American Medical Association, July 13, 1907).

HYSTERIA, TREATMENT OF.

From a study of the subject of hysteria, the writer concludes that it consists of an instability or undue irritability of all the nervous and reflex centers throughout the body, and particularly those of the vasomotor and sympathetic systems. Hysterical paralysis or tremor and many other hysterical phenomena are produced by vascular change in the nervous system and elsewhere. The essential defect in the nervous system upon which the hysteria depends is inborn and inherent—that is to say, the reflex centers in hysterical subjects are throughout life more unstable than those of other people.

The general measures directed to the improvement of the nervous irritability may consist of rest, isolation from home surroundings, food, massage, electricity, hydrotherapy, and psychotherapy or hypnotism. Of all the various measures, rest is of the greatest value in allaying irritability of the nervous system. All sources of peripheral irritation must be removed. Complete rest of the body can be obtained only in bed. Abundance of sleep is essential, and it is sometimes justifiable to administer hypnotics. Removal from the conditions under which the disease arose is almost as indispensable as rest. It is often necessary not only to remove the patients from home, but to forbid any letters to be written or received.

As much easily assimilable food as the patient can take improves the nutrition of the nervous system and of the body generally. To increase the power of assimilation, such increase in the amount of food should be associated with massage. Massage also soothes the nervous system. As a rule, no drugs should be given, except an occasional aperient or dose of bromide for sleeplessness. Electricity is of considerable use, especially in those cases where a rigid rest-cure cannot be given. Static electricity is more useful than the galvanic and faradic forms. Hydrotherapy acts powerfully on the neurovascular system. Under psychotherapy may be included all kinds of persuasion, suggestion (auto-suggestion), and hypnotism. The object is to cultivate the will and control of the patient over her unruly emotions and unstable reflex centers. Ammonium bromide is the writer's sheet anchor for allaying the irritability of the reflex centers.

Apomorphine is the best remedy for the prompt cure of severe hysterical convulsions. The writer has also had a certain amount of success with vasoconstrictors (ergot), vasodilators (pilocarpine), and remedies acting on the blood (calcium salts) in cases where there is noticeable irregularity in the vasomotor regulator mechanism. Educational and other prophylactic measures are of great value. T. D. Savill (Lancet, June 22, 1907).

INDICANURIA.

Indicanuria is one of the most important conditions in connection with clinical medicine. Indican was discovered by Prout in 1840, and blue substances have been recorded in the urine from the time of Hippocrates to the present. Baumann and Breiger were the first to determine accurately the composition of indican. Baeyer demonstrated that

a more simple substance, indol, was the antecedent of the more complex body known as indican. Nencki and others demonstrated beyond a question of doubt that indican is always the result of putrefactive fermentation. Animal proteids are more likely to undergo putrefactive fermentation than the vegetable class. Vegetable proteids are much more difficult of digestion than are the animal class; hence they are less economic, and often detrimental to the system.

Senator has proved conclusively that bacterial action is required to produce putrefactive fermentation in connection with the production of indican. The sulphur atom in connection with the formation of indoxyl potassium sulphate comes from the proteid molecule as the result of its oxidation reduction. Indican is primarily formed in the intestinal tract, and not in the liver. Numerous toxins are formed at the same time that the indican is produced. These toxins are absorbed into the circulation from the alimentary tract, and by their action upon the nervous system excite an almost endless variety of symptoms.

The conditions favoring the production of indican are errors in diet, lack of out-door exercise, defective digestive secretions, and profound disturbances in the working of the nervous mechanism. Indican in the urine is never normal, but always indicates an abnormal condition, because a putrefactive process can never be regarded as a normal or physiological phenomenon.

Successful treatment of these conditions depends absolutely upon an accurate apprehension of the etiological factors entering into the production of indicanuria, and also the best methods for the removal of those factors. W. H. Porter (Medical Record, June 15, 1907).

LOCOMOTOR ATAXIA, ETIOLOGY.

There are two exciting causes of tabes: Long-continued peripheral irritation causing it with and without a prior syphilitic infection, and chronic ergotin poisoning; and there is also a third cause, peripheral neuritis, producing a symptom-complex very similar to that of tabes dorsalis. From this would it not be fair to presume that in the case of a disease which is produced by agencies quite other than syphilis, and where syphilis is known not to have entered into the condition, and where the pathological changes do not resemble in their inception, course, or form any of the manifold and characteristically usual ones of syphilis, the disease is not primarily due to syphilis, but that other agencies enter into its causation? If allowance is made for the present that peripheral irritation is the cause of the changes in tabes, there would be a possible explanation of the mode whereby these changes may be accomplished. It is known that the conducting nerve-substance is a very simple tissue, almost protoplasmic, being little more than highly phosphorized fats in a weak saline solution. In other words, this portion of the nerve consists of colloid particles in suspension, and these colloid particles are precipitated and coagulated to a certain extent when electrically stimulated or peripherally irritated. Such peripheral irritation is that which is and has been constant for a period of time longer or shorter, as the case may be, but above all persistent and producing continuous, unconscious nervous stimulation. This irritation may exist for years without being known to the patient; in other words,

without ever producing any local symptom. Such nervous action would keep up a condition of chronic coagulation, which in time would become permanent. Given this change, the subsequent alterations of nerve-tissue are but natural sequelæ, for with the increased sensory irritability consequent upon such coagulation, and the disturbance of the orderly action and balance of both the sensory nerves and their ganglionic cells, with their trophic connections, and given the continued persistence of the initial peripheral irritation, it would seem that there was sufficient to account for the perpetuation and progress of all the pathological changes that take place in the disease. L. N. Denslow (Medical Record, June 15, 1907).

MORPHINOMANIA, ATROPINE AND STRYCHNINE IN.

The writer reports the case of a man addicted to over thirty years' use of morphine. His latest allowance was two wineglassfuls of laudanum in the day and he presented the usual symptoms of the habit. The treatment was begun with atropine sulphate, $^1/_{100}$ grain, and strychnine nitrate, $^1/_{60}$ grain, three times daily, increasing as rapidly as the patient could bear, until on the eighth day his dosage was atropine $^1/_{50}$, and strychnine $^1/_{20}$, but it was soon necessary to reduce the atropine to $^1/_{60}$. Under this plan of treatment immediate beneficial results were noted. Finally the atropine was stopped and the strychnine continued a while longer. The opium was suddenly withdrawn in this case with the usual result of nausea, vomiting, and diarrhœa, but the patient finally weathered the storm. M. S. P. Strangman (Lancet, May 18, 1907).

NEURASTHENIC NEURALGIAS.

Neurasthenic or neurotic neuralgias may be differentiated from the neuralgias due to lesion of nerve or ganglion, to toxic and infectious agents, to defects in the blood or in the body metabolism, or to other physical disorders by the following characteristics: First, psychic influences and marked fluctuations in the mental state as well as in the body condition produce noticeable variations in the degree of pain relatively greater in the neurasthenic neuralgia than in those due to more definite causes. Second, they are often characterized as being peculiarly difficult to bear; in other words, they have a mentally disorganizing or demoralizing quality. It is not because the neuralgia is so severe, but it insidiously undermines the will and power of the individual to endure it as one would bear ordinary pain of corresponding degree. Third, the neurotic neuralgias may be slow and obstinate, but they are invariably curable, unless the patient is a profound chronic invalid and will not respond to nervous and bodily upbuilding. They occur only in the neurasthenic condition, or its equivalent, however produced. Superimposed on this condition, then, is an exciting cause, such as local or general strain, exposure to wind, cold or wet, a blow or fall, emotional disturbance or mental shock, or there may be no appreciable cause.

The neurasthenic neuralgias may be non-objective, that is, with very slight or no concomitant physical symptoms, or they may be objective, that is, the pain is accompanied by localized symptoms, sensory, vasomotor, secretory. The former may be subdivided into the paræsthetic or "nervous pain," the habit pain, and the idiopathic varieties. The objective or neuritic variety has definite

local symptoms and simulates neuritis, so that a diagnosis between neuritis and a neuritic neuralgia is sometimes difficult. There is no true motor element present in the neuralgia, while some degree of paresis or paralysis is common in neuritis and the points of Valleix are absent. Atrophy and anæsthesia are not present in neuralgia.

The origin of the neurasthenic neuralgias can be interpreted as follows: There exists in all cases a definite central element or factor; in the nonobjective forms the central is relatively greater than the peripheral element, the latter being merely the external manifestation of a disturbed condition of an internal sensory nerve-center or tract; in the objective or neuritic neuralgia the same postulate holds true, the peripheral manifestations simply being increased in extent or degree; and finally, in all cases where the peripheral element operates as a factor in the production of the pain, it is best explained as some form of perineuritis irritation; it is certainly not a true neuritis.

In the symptomatology the mental characteristics of the patients are spoken of and the point is brought out that individuals with a relatively weak will, by nature or through invalidism, or intense in thought and action are prone to the neuritic neuralgias.

The treatment consists essentially in rest for the affected part and building up the underlying neurasthenic or below-par condition of the patient. In treating neurasthenics it is a mistake to make the symptoms too objective or label them with specific names. As Dana has recently pointed out, it is both unfortunate and incorrect to apply the fashionable term neuritis to so many of the brachial neuralgias. F. K. Hallock (Journal of the American Medical Association, June 29, 1907).

OPSONIC PHENOMENON, EXPERIMENTAL BASIS OF THE.

The blood-serum is necessary in a certain sense for phagocytosis, and, in the absence of opsonins, phagocytosis is ineffectual. The majority of bacteria are susceptible to opsonins. Some bacilli, however, are subject to phagocytosis just as well in an indifferent medium, such as salt solution. Saprophytes require blood-serum in order to undergo phagocytosis. Virulent bacteria resist phagocytosis unless an immune serum is present. There is a definite progress in the phenomenon of phagocytosis on the injection of bacteria: first, a lessened, and later an increased, phagocytosis. Diminution of the opsonic power of the serum antedates infection, and is its cause. That each bacterium forms a specific opsonin has been disputed. A fatal dose of a microörganism, such as staphylococcus aureus, when injected into the peritoneal cavity of an animal, produces a certain amount of fluid, which will be found to have lost its power to opsonize the staphylococcus aureus and other bacteria. This is not due to the antagonistic action of the fluid, because if it is mixed with blood-serum the opsonic power of the serum is increased. The fluid produced by a sterile inflammation of the peritoneal cavity has the power of opsonizing staphylococcus aureus. If, however, the fluid is purulent, it has no power to produce phagocytosis. The presence or absence of opsonins is no accurate measure of infection. In the normal progress of an inflammatory reaction from serum to pus the opsonic power of the fluid is lost.

E. L. Opie (New York Medical Journal, June 15, 1907).

PARATHYROID GLANDS IN MAN, STRUCTURE AND SECRETION OF THE.

The parathyroid gland, like other glands, presents the histological variations of activity and rest. The so-called oxyphile cells are cells distended with granular secretion, and the so-called principal cells represent the exhausted stage. Intermediate forms are common. The granular secretion of the cells is extruded into the surrounding lymphatic spaces and often the product of many cells runs together to form a drop. This may either lie in an irregular space between the cells or occupy a central position around which the cells are grouped to form a vesicle. In either case the secretion passes into the smaller lymphatic vessels and gradually flows along larger vessels to reach the surface, whence it drains away from the gland. The secretion of the parathyroid, both in its physical characters and in its microchemical reactions, appears indistinguishable from the colloid of the thyroid.

During the first few months of life the parathyroid glands show few, if any, signs of activity. By the end of the third month at least colloid secretion may be found, though the infantile type may persist for some years. David Forsyth (British Medical Journal, May 18, 1907).

PERNICIOUS ANÆMIA, EARLY SYMPTOMS OF.

The author takes up the question of whether or not it is possible to diagnose pernicious anæmia by the early symptoms before the appearance of the characteristic blood-picture of the disease. While the literature shows that there is no regularity in the order of their appearance, there are facts enough to indicate their importance. In his 20 cases, achylia gastrica, with its associated diarrhœa, was present in 14, and in 9 it was a very early symptom. In 1 case it seemed to have been present thirty-five years before the blood-condition was recognized, and in another, which he reports, it was present eight years before the blood-picture developed; in still another case reported it was present six years before. The nervous symptoms may be early or late, and in only 1 of his 6 cases with early nervous symptoms did they appear before the signs in the blood were found. The cardiovascular are the least characteristic early symptoms; in only 1 of his 5 cases presenting them as such did he properly interpret them before finding the pathognomonic blood-signs. The author, therefore, is unable at present to describe a symptom-complex indicating pernicious anæmia before the occurrence, or discovery of the blood-changes, but he believes, nevertheless, a more careful study of patients in the early stages of the diseases will give considerable evidence that such a symptom-complex exists. J. A. Lichty (Journal of the American Medical Association, June 229, 1907).

PHIMOSIS AS A CAUSE OF GENERAL DISTURBANCES.

While attention has already been directed to phimosis as a possible etiological factor in the causation of urinary disturbances and nervous symptoms in children, it has not been recognized to a sufficient degree that other conditions may also be referable to this abnormality of the prepuce. The writer reports a number of cases in which constipation in infants was relieved by the op-

eration of circumcision, and explains the beneficial effect of the procedure as follows: As a result of the stenosis of the preputial opening the act of urination is rendered difficult, and ultimately the bladder is imperfectly emptied, becomes dilated, and a more or less serious state of overflow incontinence results. As a consequence of this the pelvic organs are crowded by the enlarged bladder, the rectum is pressed upon, and constipation results. In consequence of this early perversion of function, more or less serious and persistent disturbances are caused, which may require a long time to subside, even after the initial source of the trouble has been relieved by circumcision. Witzenhausen (Münchener medizinische Wochenschrift, May 28, 1907; Medical Record, June 29, 1907).

PNEUMONIA IN CHILDREN.

In the case of young children suffering from acute disease of the lungs, it is of more importance to keep an accurate record of the respiration rate than of the pulse rate. It is a measure of the defective aëration of the blood, and reminds us that a prolonged and considerable rise in the respiration rate may be followed by a rapidly culminating exhaustion, matters of great importance in prognosis and treatment.

In the early stages of acute pneumonia in children, apart from rickets, the extent and duration of the disease are the chief factors in accelerating the rate of breathing. The writer disbelieves in the current classification of pneumonia in children into lobar pneumonia and broncho-pneumonia, holding that it is inaccurate and of no clinical utility. The symptoms and signs are so variable and are met with in such different combinations, that classification is almost impossible. To him broncho-pneumonia simply means a pneumonia that in spreading seems to follow the distribution of the bronchial tubes, and lobar pneumonia one that spreads in a fairly even advancing line; in this sense only is broncho-pneumonia a commoner disease of childhood than lobar pneumonia. Each sign and symptom should be estimated individually as to its influence on prognosis and treatment, rather than all being lumped together in an arbitrary, hypothetical group.

From a study of fifty-four cases of acute pneumonia in children, the following was learned: The more definitely localized the pneumonia, the more sudden the onset. Vomiting is the most constant of the early symptoms, while convulsions are extremely rare as an initial symptom. Pain, an important and significant symptom in the adult, is rarely noteworthy in childhood. The feature most difficult to classify is the fever, it being impossible to group the cases into "continuous" and "remittent." Empyema and pericarditis are most exceptional complications in children. Relapses are always due to direct extension either from the original focus or from some other patch of consolidation.

The two most important factors in forming a prognosis are age and nutrition. Most of the cases under one year of age die. Rickets is a very serious factor, especially in prolonged cases. The more sudden the onset and the more localized the consolidation, the better are the patient's chances. Because of the importance of wasting and of continued vomiting, special attention should be paid to the diet.

The writer does not employ ice-bags or venesection. A free supply of fresh air is of prime importance. Drugs have

little influence over the course of pneumonia in children, except as stimulants to the circulation or respiration. H. M. Murray (British Medical Journal, June 8, 1907).

PULMONARY TUBERCULOSIS, DIGESTIVE DISORDERS IN.

The dangers of forced feeding, according to the writer, are over-emphasized by many. That there are real dangers, however, cannot be denied. The production of indigestion and bilious or auto-intoxication attacks is a frequent sequel. Pathological obesity occasionally results. Both conditions are fraught with risks for the consumptive. The dangers of indigestion are apparent, as with a single attack the patient may retrograde much in pounds and general nutrition, and a quiescent lesion may as a result be stirred into activity. The dangers of obesity are not so violent, as with many it is thought to be the end and aim of treatment. The motto of the physician should be to persevere in hyperalimentation till the nutrition has reached an eminently satisfactory point — at the same time guarding against the production of indigestion and pathological obesity, with its attendant fatty heart and diminished functional capacity. J. R. Arneill (Journal of the American Medical Association, July 6, 1907).

RACHITIS, IMPORTANCE OF EARLY RECOGNITION AND TREATMENT OF.

It has been claimed by some that all bottle-fed infants are rachitic. This does not apply to those whose food is properly controlled, or whose digestion is good. Rachitis develops because of parental blindness in many instances, the parents failing to recognize peculiarities in the child which need special attention. Many times, too, physicians fail to recognize the early symptoms of the disease. Rachitic deformities are often far advanced before medical aid is sought, and the early signs are often unrecognized and untreated. Evidences of rachitis may easily be overlooked upon superficial examination. There is great variation in the incidence of the symptoms. While rachitis may undoubtedly begin before the fifth month, yet in the writer's experience this was exceptionally the case. The grouping of the symptoms is also subject to great variation. Rachitis is of very frequent occurrence among infants. Acute rachitis is a menace to infancy, and rachitic deformities a menace to the adult. Prophylaxis should therefore be strongly urged. Racial predisposition has been noted, negroes and the poor children of foreign parents seeming particularly susceptible to the condition. The dietetic treatment in the first and second years is of great importance. The use of codliver-oil and phosphorus, singly or together, is advocated. Phosphorus is of great value in cutting short the acute and progressive symptoms of the disease. T. S. Southworth (Medical Record, June 15, 1907).

REFERRED PAIN.

It is difficult to classify pain, but the writer states that the following distinctions may be made: There are the pains of inflammation, of pressure, and of stretching—the two latter probably the same. Then there is neuralgic pain —pain with no organic lesion—and subjective pain, where the mind itself is at fault. Lastly, there is referred or sympathetic pain—by this is meant that variety of pain which is located to one healthy part of the body as a result of disease in another. It may be the only

pain produced by the disease, or it may coëxist with a greater or less degree of local pain set up in the affected viscus. Allocheiria is that uncommon condition where the patient refers stimuli applied to one part of his body to a corresponding position on the opposite side. True neuralgia depends on no nerve-lesion, neither is it referred from any remote condition. It is entirely distinct from referred pain, and yet the diagnosis is often extremely difficult. The points to be relied on are the area of distribution and the presence or absence of superficial tenderness. Referred pain is associated with hyperalgesia; with neuralgia this is unusual. Referred pain (and its superficial tenderness) is limited by boundaries set in the central nervous system; the distribution in neuralgia corresponds to some peripheral nerve. D. Forsyth (British Medical Journal, June 22, 1907).

SODIUM PHOSPHATE IN NEURASTHENIC CONDITIONS AND IN EXOPHTHALMIC GOITER.

The author has been proclaiming for some years the advantage of sodium phosphate in exophthalmic goiter. His later experience fully confirms his first assertions in regard to the efficacy of this remedy, which, he says, was first suggested by the success of organotherapy. He has now a record of 40 cases of exophthalmic goiter in which it has been applied. He tries it in every case and generally derives great benefit from it. His present article relates his experience with it in neurasthenic conditions. He gives the details of 6 out of 30 cases in which he has administered it in his private practice, while it has been given to hundreds at the hospital. No by-effects were observed, but the tonic action on the nervous system was striking in many instances. He adds that the drug is a welcome addition to the usual measures at our command in treating the protean manifestations of neurasthenia. The examples given show marked benefit under sodium phosphate administration and its harmlessness even when continued for months. He orders one tablespoonful four times a day of a solution of 15 parts sodium phosphate in 250 parts of water. H. J. Vetlesen (Norsk Magazin for Laegevidenskaben, vol. lxviii, No. 4; Journal of the American Medical Association, June 22, 1907).

SYPHILIS, PILOCARPINE AS AN ADJUVANT IN THE TREATMENT OF.

According to the writer, pilocarpine is a most remarkable glandular eliminant, and glandular elimination is one of the most important factors in the successful treatment of syphilis. As such it is of value in all secondary manifestations of the disease. There are many cases which become intolerant to the further use of mercury; the system seems supersaturated, and continuing the mercury in such cases means injuring the patient. Discontinuing the mercury, giving pilocarpine in the interval, permits of the resumption of the former drug with excellent effect. Pilocarpine should be prescribed alone, either in pills or solution, and should be given in doses of 2 to 8 milligrams ($^1/_{32}$ to $^1/_8$ gr.) two or three times a day. W. J. Robinson (Medical Record, June 15, 1907).

TUBERCULOSIS, DIET IN.

Diet is a most important factor in the treatment of tuberculosis, and the food must be palatable and well-served and the amount must vary with the patient and his circumstances. The out-door

air will enable him to assimilate large amounts. Milk and eggs are the best foods to produce fats, which are most necessary for the patient. The author advocates three solid meals a day, with lunches between of milk and eggs, about three quarts of milk and six eggs a day being taken. Fresh meats are especially necessary for these patients, but a mixed diet is undoubtedly the best borne. Meat juice is valuable. Pastry, candy, fried foods, and cabbage should be avoided. Alcohol is not advisable, but coffee, tea, and chocolate may be taken moderately. H. C. Clapp (Medical Record, June 29, 1907).

TUBERCULOSIS OF THE TESTICLE.

Testicular tuberculosis is clinically never an isolated lesion. It is only one feature of a general genital tuberculosis, for sterility is frequent, if not constant, at the time the first testis is invaded. There is evidence at this time of inflammation of the internal genitals. Relapse in the opposite testicle occurs within a few years, in eight or nine out of ten cases, and such relapse is in nowise postponed by early removal of the diseased testis. Moreover, though suppuration seems often to result in permanent cure of the local process, and though a chronic focus several years old is likely never to suppurate, yet in no case can one feel certain of a real cure unless the tubercular epididymitis has been removed. Now the demoralizing effect of epididymectomy is not to be compared with that of castration, and slight tuberculosis of the testis may be depended upon to heal spontaneously after removal of the epididymis. Hence epididymectomy is the radical operation of choice, unless there is hyperacute generalized epididymo-orchitis, or unless the testis is destroyed by suppuration. This operation has a beneficial effect upon the general health and upon tuberculosis of the internal genitals. It should, therefore, be performed early in the disease. This in spite of the fact that tuberculosis of the testis is often but an insignificant part of a generalized progressive tuberculosis, or is for many years the only active lesion of the disease. If the patient is sterile, it would probably be wise to remove both epididymes, even though only one side is diseased. E. L. Keyes, Jr. (Annals of Surgery, June, 1907).

TYPHLITIS WITHOUT APPENDICITIS.

Primary, acute, and chronic typhlitis occurs independently of appendicitis, dysentery, tuberculosis, actinomycosis, or cancer, and is idiopathic in origin or depends on coprostatis. Primary typhlitis, the appendix being normal, may lead to perforation, with the formation of perityphlitic abscess or general peritonitis. The symptoms of primary typhlitis are usually identical with those of appendicitis, and the indications for operation are similar in the two conditions. This form is rare, however, in comparison with the frequency of appendicitis.

The differential diagnosis of inflammatory typhlitis from tuberculosis, cancer, and actinomycosis may be possible at operation, in which case a section of the cæcum should be removed for microscopical examination.

The recurrence of symptoms after removal of the appendix may be due to attacks of typhlitis, the treatment for which consists in the regulation of the diet and the use of oil-enemata, etc. The danger of a primary typhlitis consists in the liability to the rupture of an ulcer and to the development of appendicitis.

Purgatives are contraindicated in inflammations of the right iliac fossa because of the danger of rupturing an ulcer in the cæcum or appendix, or of breaking up the adhesions about an abscess. The treatment of primary typhlitis consists in laparotomy, removal of the appendix, closure of any perforation if possible, invagination of any threatening perforation of the cæcum, drainage of the right iliac fossa, and the removal of a piece of the cæcal wall for microscopical examination, if that be necessary to establish the diagnosis. C. A. McWilliams (Annals of Surgery, June, 1907).

AMERICAN MEDICAL EDITORS' ASSOCIATION.

The thirty-ninth annual meeting of this Society was the most successful in point of attendance and general interest ever held. The rapid increase in membership is an assurance that in the future the meetings of the American Medical Editors' Association will be an important feature annually. Sixty-four new members were elected as follows:—

Hills Cole, New York, North American Journal of Homeopathy. L. H. South, Bowling Green, Ky., Kentucky Medical Journal. J. Elsner, Denver, Colo., Colorado Medical Journal. W. L. Dickinson, Saginaw, Mich., Journal of Physical Therapy. F. T. B. Fest, New Mexico, Journal of Physical Therapy. F. H. Garrison, Washington, D. C., Index Medicus. R. Fletcher, Washington, D. C., Index Medicus. H. G. Goldberg, Philadelphia, Pa., Annals of Ophthalmology. John Guttman, New York City, Ophthalmology. L. J. Hirschman, Detroit, Mich., Harper Hospital Bulletin. R. J. Held, New York City, Medical Review of Reviews. W. F. Honan, New York City, Journal of Surgery, Gynecology and Obstetrics. R. H. Sayre, New York City, Sajous's Cyclopædia of Medicine. P. W. Shedd, New York City, North American Journal of Homeopathy. B. L. Simmons, Greenville, Tenn., Eclecticism. T. A. Stevens, Caney, Kan., Oklahoma Medical News Journal. J. A. Wilson, Philadelphia, Pa., American Journal of Orthopedic Surgery. DeW. G. Wilson, Buffalo, N. Y., Cleveland Medical and Surgical Reporter. T. W. White, Philadelphia, Pa., Annals of Surgery. O. C. Welbourn, Los Angeles, Cal., Los Angeles Journal of Eclectic Medicine. J. E. Weeks, New York City, The Ophthalmic Record. L. G. Robinovitch, New York City, The Journal of Mental Pathology. Curran Pope, Louisville, Ky., Journal of Advanced Therapeutics. E. S. McKee, Cincinnati, O., Southern Medicine. W. Litterer, Nashville, Tenn., Southern Medicine and Surgery. E. E. King, Toronto, Ontario, Canada, Canadian Practitioner and Review. O. Juettner, Cincinnati, O., International Journal of Therapy. J. H. Burch, Baldwinsville, N. Y., Journal of Advanced Therapeutics. S. S. Bishop, Chicago, Ill., Illinois Medical Bulletin. F. B. Bishop, Washington, D. C., Advanced Therapeutics. J. S. Billings, Jr., New York City, New York Medical Journal. M. O. Baer, San Juan, P. R., El Boletin de la Asociacion Medica de Puerto Rico. Mary M. S. Johnstone, Chicago, Ill., Woman's Medical Journal. G. L. Richards, Fall River, Mass., Annals of Otology, Laryngology and Rhinology. Y. G. Martinez, Mayaguez, P. R., Boletin de la Asociacion Medica de Puerto Rico. M. D. Lederman, New York City, Laryngoscope. M. L. Foster, New York, Annals of Ophthalmology. L. R. Kaufman, New York, The Chironian. O. E. Lademann, Milwaukee, Wis., Medical Fortnightly. J. S. A. Gaines, Nashville, Tenn., Southern Medicine and Surgery. C. A. Wood, Chicago, Ill., Ophthalmology. C. Chassaignac, New Orleans, La., New Orleans Medical and Surgical Journal. F. C. Eastman, Brooklyn, N. Y., Neurographs. G. H. Fox, New York City, Medical Review of Reviews. J. Burroughs, Asheville, N. C., Gaillard's Medical Journal. A. T. Huntington, Brooklyn, N. Y., Medical Library & Historical Journal. Margaret H. Rockwell, Toledo, O., Woman's Medical Journal. B. R. Schenck, Detroit, Mich., Journal of Michigan State Medical Society. E. Amberg, Detroit, Mich., Journal of Michigan State Medical Society. I. C. Chase, Fort Worth, Tex., Texas State Journal of Medicine. A. T. McCormack, Bowling Green, Ky., Kentucky Medical Journal. C. C. Stephenson, Little Rock., Ark., Journal of Arkansas Medical Society. J. W. Jervey, Greenville, S. C., Journal of South Carolina Medical Society. I. Dyer, New Orleans, La., New Orleans Medical and Surgical Journal. C. H. May, New York City, Ophthalmology. J. W. Wainwright, New York, Dietetic and Hygienic Gazette. G. A. De Saxe, New York, New York Medical Journal. A. W. Palmer, New York, Homeopathic Eye, Ear and Throat Journal. G. O. Hughes, Winnipeg, Canada, Western Canada Medical Journal. T. A. Woodruff, New York, Ophthalmic Record. J. L. Moffatt, Brooklyn, N. Y., Homeopathic Eye, Ear, and Throat Journal. H. F. Pitcher, Haverhill, Mass., Advanced Therapeutics.

J. P. Warbasse, Brooklyn, N. Y., New York State Journal of Medicine. D. O. English, New Brunswick, N. J., Journal of Medical Society of New Jersey.

The papers presented were of unusual interest, were thoroughly discussed and will appear in the form of a bound transaction early this fall. The papers read were as follows:—

The Future of Medical Journalism, by JAMES EVELYN PILCHER, M.D., Pres.

Shortcomings of Physiology the Chief Obstacle to Medical Progress, by C. E. DE M. SAJOUS, M.D.

How Can We Make Medical Journalism Better? (a) For Our Readers. (b) For Our Advertisers. (c) For Ourselves. By W. C. ABBOTT.

A Word or Two from an ex-Journalist, by SAMUEL W. KELLEY, M.D.

The First Medical Journals, by O. F. BALL, M.D.

Twenty-five Years of Medical Editorship, by STEPHEN LEWIS PILCHER, M.D.

The Psychology of Medical Journals from the Reader's Standpoint, by T. D. CROTHERS, M.D.

Further Reflection on the Official versus Independent Medical Journals, One Year's History, by W. J. ROBINSON, M.D.

The Situation, by C. F. TAYLOR, M.D.

Some Aspects on Medical Journalism, by W. F. WAUGH, M.D.

Subject Not Announced, by J. J. TAYLOR, M.D.

A Few Feeble Remarks. by W. A. YOUNG, M.D.

Medical Abstracts and Their Relation to the Medical Journal, by MARY M. S. JOHNSTONE, M.D.

The American Medical Editors' Association, Past, Present, and Future, by JOSEPH MACDONALD, JR., M.D.

An important feature of the meeting was the appointment of a Committee of Publicity, whose duty it will be to see that the medical profession, through the medical press, are promptly informed upon all matters of general interest. The committee appointed was: W. J. Robinson, M.D.; Thomas Stedman, M.D., and the Secretary of the Association.

The following officers were elected: President, C. F. Taylor, M.D., Philadelphia, Pa., Editor of the Medical World.; 1st Vice-President, Kenneth Millican, M.D., St. Louis, Editor St. Louis Medical Review; 2nd Vice-President, H. E. Lewis, M.D., N. Y., Managing Editor of the International Journal of Surgery; Secretary and Treasurer, J. MacDonald, Jr., M.D., Managing Editor of the American Journal of Surgery.

Executive Committee: Dr. W. C. Abbott, Editor of American Journal of Clinical Medicine, Chicago, Ill.; Dr. W. A. Young, Editor of Canadian Journal of Medicine and Surgery, Toronto, Ont.; Dr. D. C. English, Editor of the Journal of the Medical Society of New Jersey, New Brunswick, N. J.

Book Reviews

MEDICAL DIAGNOSIS. A Manual for Students and Practitioners. By Charles Lyman Greene, M.D., Professor of the Theory and the Practice of Medicine in the University of Minnesota; Attending Physician, St. Luke's Hospital, the City Hospital, and the St. Paul Free Dispensary; Member of the Association of American Physicians, the American Medical Association, American Association for the Advancement of Science; Author of "The Examination for Life Insurance and its Associated Clinical Methods," etc. With 7 Colored Plates and 230 Illustrations. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, 1907.

Appreciating the difficulties encountered by the overtaxed student and the busy general practitioner in clearing up certain indefinite facts of a case in an effort to arrive at an accurate diagnosis, the author has compiled a book which will assist the reader in early accomplishing his object, without necessitating the perusal of a large amount of useless material as found in many of the modern text-books.

In the early pages the physician cannot help but be impressed with the advice given by this able teacher as to the great advantage of careful case-taking, and the assistance to be derived by the ability to make careful observations of every detail, viz., the attitude of the patient, the general facial expression, the condition of the skin, and even the hand-shake. The author strongly advises a routine method of examination in every case, as it will often be of the greatest assistance to the physician in determining the cause of the ailment, whereas, at first sight, the diagnosis appears quite obscure. Using the words of the author, "Case-

taking, recording, and reporting should be carried into every man's practice. Old case-books well kept are mines of knowledge, and the science of medicine would be greatly enriched were the workers in city and hamlet alike to give to it reports of the unusual cases now for the most part allowed to pass without record."

Although the text considers about every condition along the line of medicine which the student or general practitioner is liable to come in contact with, the volume is of convenient size and of easy handling. The subject matter is necessarily concise, but it is clear and to the point. Marginal notes and running page headlines add much to the saving of time in locating the information sought after.

The author has well accomplished the promises of the title-page, and it is with much pleasure that we recommend this book for free use among students and busy practitioners.—R. B. S.

THE USE OF THE NATIONAL FORESTS. Issued by the United States Department of Agriculture Forest Service, 1907.

"The Use of the National Forests," a publication just printed by the Department of Agriculture, is a brief, clear manual for public information as to the forest policy of the National Government.

It is too true, as the short preface to the public says, that "many people do not know what National Forests are. Others may have heard much about them, but have no idea of their true purpose and use." It is the object of this publication to explain just what the National Forests mean, what they are for, and how to use them.

In the first place, it is explained how the forests are created and how their boundaries are drawn. Next, their direct use and value are shown from the point of view of the home-seeker, the prospector and miner, the user of timber, the user of the range, the user of water, and other users of forest resources. Third, it is shown how the forests are intended for use, for the production of usable products, and for the establishment and maintenance of homes; how on all of them the timber is protected from fire, the water flow is kept steady, the forage on the range is increased and guarded from abuse; and how, in addition, they serve as great public playgrounds and as breeding places and refuge for game. Finally the management of the National Forests is described.

Here it is that the great usefulness of the forests is brought out most clearly and strikingly; for the forests are managed by the people in their own interests, and every means is used to meet the desires and wants of all forest users half way by dealing with them in the main directly on the ground and in all cases with the utmost practicable dispatch and freedom from red tape.

In a word, the special interest of this manual lies in its showing that the forest policy of the Government, both in principle and in practice, is for the benefit of the ordinary man, for the benefit of every citizen equally. There is still a tendency to think of the National Forests as "preserves" closed to use, and to leave the public lands exposed to unregulated individual exploitation. Where these misapprehensions still prevail "The Use of the National Forests" will go far to correct them.

The book is written by Mr. Frederick E. Olmsted, whose intimate knowledge of conditions in the west and the policy under which the National Forests are managed especially fits him to deal with the subject.

Books and Monographs Received

The editor begs to acknowledge with thanks the receipt of the following books and monographs:—

"Diseases of the Rectum: Their Consequences and Non-surgical Treatment." By W. C. Brinkerhoff, Chicago, Ill., 1907.——"Report on the Origin and Prevalence of Typhoid Fever in the District of Columbia." By M. J. Rosenau, L. L. Lumsden, and Joseph H. Kastle, Public Health and Marine-Hospital Service of the United States, Washington, D. C., 1907.——"Hygienic Laboratory, Bulletin No. 34: I. Agamofilaria georgiani n. sp., an Apparently New Roundworm Parasite from the Ankle of a Negress. II. The Zoölogical Characters of the Roundworm Genus Filaria Mueller, 1787. III. Three New American Cases of Infection of Man with Horse-hair Worms (species Paragordius varius), with Summary of all Cases reported to Date." By Ch. Wardell Stiles, Public Health and Marine-Hospital Service, Washington, D. C., 1907.——"A Case of Tetanus Neonatorum with Recovery." By E. L. Dewey and W. E. Putnam, Whiting, Ind., 1906.——"The Climate of Southern Maine in the Treatment of the Later Stages of Hypertonia Vasorum." By L. F. Bishop, New York City,

1907.——"Law, the Foundation of State Medicine." By S. G. Dixon, Harrisburg, Pa., 1907. ——"A Simple Contrivance for the Relief of Hay Fever." By A. C. Heath, St. Paul, Minn., 1906.——"The Duty of Restoring Hearing by Operation in Chronic Aural Suppuration." By C. J. Heath, London, Eng., 1907.——"The Treatment of Chronic Suppuration of the Middle Ear Without Removal of the Drum Membrane and Ossicles." By C. J. Heath, London, Eng., 1907.

From the United States Department of Agriculture the following: "Year-book of the United States Department of Agriculture." 1906.——"The Use of the National Forests." 1907.——"The Use Book: Regulations and Instructions for the Use of the National Forests." 1907.——"Hawks and Owls from the Standpoint of the Farmer." By A. K. Fischer, 1907. ——"The White-pine Weevil." By A. D. Hopkins, 1907.——"The Construction of Macadam Roads." By Austin B. Fletcher, 1907.——"Poultry Management." By G. Arthur Bell, 1907.——"The Man Who Works with His Hands." Address of President Roosevelt at the Semi-centennial Celebration of the Founding of Agricultural Colleges in the United States, at Lansing, Mich., May 31, 1907.——"Production of Red Cedar for Pencil Wood." By L. L. White, 1907.——"Food Value of Corn and Corn Products." By C. D. Woods, 1907.

EDITORIAL STAFF.

Sajous's Analytical Cyclopædia of Practical Medicine.

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Special Article

THE FUTURE SCIENCE OF MEDICINE.

BY J. MADISON TAYLOR, A.B., M.D.,
PHILADELPHIA.

UNDER the above heading the St. Louis Medical Review of June 8, 1907, published the following lines: "Dr. C. E. de M. Sajous announced on June 3d, at the American Medical Editors' Association, the crowning point of his patient labors on the ductless glands, in the discovery in the pituitary body of a membrane functionally resembling the Schneiderian [its olfactory area], in that it tested the condition of the body fluids and automatically regulated the correction of depraved conditions by producing antitoxins. Complete details by the author will appear shortly. It seems probable that an *absolutely scientific therapy* is now within sight." The announcement referred to was made at the dinner of the Association, which took place on the day mentioned. The complete details are to be found in the second volume of Sajous's "Internal Secretions," which has since appeared. The great interest awakened by his address, and the recent announcement that "Internal Secretions" was regarded on the Continent of Europe as so marked an advance in our knowledge of the functions of the ductless glands that it is to be translated into French by one of the greatest authorities on the anatomy and histology of these organs, Professor Launois, of Paris, who has suggested the advisability of giving our readers an outline of the function referred to above, which will unquestionably revolutionize medicine in the sense specified by the St. Louis Medical Review.

As is now generally known, Sajous's study of the functions of the ductless glands was only an incidental feature of his purpose to give medicine a more solid foundation than that upon which it rests at the present time.

Nearly twenty years ago, when, as editor of the Annual of the Universal Medical Sciences, it became his duty to collate yearly the progress in all branches of medicine, he was surprised to note the amount of theorizing being indulged in by investigators in every branch of medical science: physiologists, physiologic chemists, histologists, therapeutists, clinicians, etc. After reciting a few experiments on clinical observations, and giving a perfunctory and often very imperfect review of the literature of the subject, authors of unquestionable merit would not hesitate to launch forth tentative deductions on every conceivable subject, until our knowledge of any question became literally congested with discordant figments of imagination. Whether these new theories might not become flagrant misfits when everything became ultimately known of the questions to which they were appended was not taken into account of their authors; they had launched *"something original,"* and on the strength of the frogs and guinea-pigs used in the experiment, or the few clinical observations quoted, and that something was assured by them to be immensely "scientific." It is to this fundamental defect that Sajous ascribes the present deplorable condition of medicine, which he compares to that of art during the Dark Ages. What has been justly termed by an editorial writer in the New York Medical Record "Osler's black, hopeless, helpless, therapeutic pessimism" has, in his opinion, no other cause. He holds that if we are forced to admit to-day that Skoda's well-known dictum that "we can diagnose disease, describe it, and get a grasp of it, but we dare not expect by any means to cure it" still holds good, it is because much that is valuable in the work of modern investigators is hidden under the maze of false and misleading conclusions with which they have encumbered medical lore.

How can confidence in medicine as the "healing art" be restored? Can it be achieved through the sacrifice of yet more frogs, more guinea-pigs, by more laboratory guesses—the addition of a few more theories to the thousands that have driven medicine to practical bankruptcy? Sajous concluded that but one course afforded any chance of success in this direction, viz., to cast aside all theories, and with the aid of the huge aggregation of positive facts, experimental and clinical, actual results, etc., recorded by reliable investigators in all branches of medical science, *seek the solution of all admittedly undiscovered functions* even as a mathematician deals with a series of problems which he may wish to solve. By this plan, he avoided entirely the pit into which investigators had hitherto fallen, *i.e.*, that of being inspired by any preconceived theory, while giving all experimental and clinical facts their legitimate place in the process—*e.g.*, the place filled by the bricks, stones, wood, mortar, metals, etc., used in the erection of a building. This involved the use of logic, *i.e.*,

of analytic and synthetic reasoning, which, according to Sajous, are utilized too sparingly by modern investigators. The great French biologist, Milne-Edwards, wrote many years ago: "The history of science teaches us to do justice to the modest investigators whose patient labors have furnished us the materials thanks to which *generalizing minds* have been able to construct the scientific edifice. But, above all, it teaches us to appreciate those men who, avoiding vain speculations, and reasoning only from well-established facts, have been able to encompass the aggregate of these phenomena within their field of vision and point to the general and constant relations which unite them one to the other." That synthetic philosophy is a *sin qua non* of this, the highest and most difficult mission which any scientific man can undertake, is abundantly obvious.

It is to his *analytic* work that Sajous owed the discovery that the underlying cause of the existing confusion in medicine was due to the prevailing lack of knowledge concerning the functions of the ductless glands; it was his *synthetic* work which led him to the discovery of the true rôle of these organs in the body. As soon as these functions had been established by him, *hundreds* of problems, ninety-six of which he enumerates in the introduction to his second volume (and any one of which would qualify him to earn the gratitude of posterity), found a ready solution, the experimental results of a multitude of investigators thus falling into line, as it were, of their own accord. Pulmonary and tissue respiration, absorption and nutrition, the circulation of the nervous system (Harvey having discovered that of the larger vessels and Malpighi that of the capillaries), the nature of organic function and the manner in which it is awakened by vasodilator nerves, the composition of ferments, the physiologic and morbid production of sleep, etc., are but a few of the many problems which physiologists had admittedly failed to solve, as is well illustrated by Osler's remark that while we know little concerning the action of drugs, "we put them into bodies the action of which we know less."

When once all these problems were solved, and the solutions proven correct by the precision with which they all harmonized, a superb mechanism revealed itself to Sajous: that of the human organism *complete*, the functions of the ductless glands and the presence of their products in all organs having filled many deplorable gaps—those identical functions which physiologists and histologists, notwithstanding their painstaking labors, had failed to explain. The tendency of modern investigators to introduce hypotheses, tentative guesses, etc., on all topics was also explained: they had observed phenomena on all sides which, without a knowledge of the functions of the ductless glands, were unintelligible, and for which they supplied what appeared to them as plausible explanations.

A brief review of the main steps of Sajous's labors will not only serve to illustrate all these facts, but it will lead up to the crowning feature of his work, viz.: the discovery of the process through which the body antagonizes disease by providing the blood with what he has termed its "auto-antitoxin:"—

Adrenals.—Sajous found that these organs supplied a secretion which passed to the lungs and took up therein the oxygen of the air. This solved the cardinal problem of human functions: that of pulmonary respiration. Physiologists had also failed to discover the identity of 94 per cent. of the hæmoglobin molecule. This likewise proved to be the oxygenized adrenal secretion. The nature and the source of an oxidizing substance found in the blood, oxidase, had also remained undetermined. Sajous found that this substance, the (albuminous) 94 per cent. of hæmoglobin, and the oxygenized adrenal secretion were one and the same; that all tissues contained it; and that it was this substance which supplied the tissues with oxygen. He discovered another important fact in this connection, viz., that it was the adrenal active principle, thus distributed to all cells, which sustained their life—the principle which Herbert Spencer deemed necessary to account for the vital process (his "dynamic element of life"), but the presence, source, and identity of which were to him unknown. Dr. Sajous had thus solved simultaneously the problems of tissue respiration and cellular life. The importance of these discoveries from the standpoint of practice cannot be overestimated, for, as we will now see, we are able *with our remedies* to *govern* the adrenals, and therefore *oxygenation* of all cells and the *life process* itself where its activity is subnormal.

Thyroid Gland.—As is now well known to all physicians, thyroid extract given to a cretin or an idiotic child in whom the functions of the thyroid gland are deficient, brings about a wonderful change. The body soon begins to grow, all the functions are remarkably stimulated, and the brain, practically inactive before, assumes its physiologic rôle as the organ of thought. What amounts to a mere "human plant" is finally transformed into a normal child, and remains such, but only so long as thyroid extract is administered to it. Now, thyroid extract has long been known to enhance actively the body's oxygenation. But how does it bring about this result? How does it produce the wonderful transformation in the cretin? Sajous also solved this problem. He found that *the purpose of the thyroid secretion was to excite a center in the brain* (to which reference will be made presently) connected with the adrenals by nerves, and that it was therefore by stimulating indirectly the adrenals that the thyroid extract produced its wonderful effects.

It is here that the great practical importance of Sajous's discoveries is

demonstrated. Not only did he find that thyroid extract excited the adrenal center, but that several of our remedies, iodine, the iodides, mercury, coca, and others, did likewise. The unexplained physiologic action of these remedies in combating some of the most destructive diseases of mankind thus became clear; they increased the oxygenizing power of the blood and the activity of the vital process, and thereby the power of the body to fight disease and destroy pathogenic bacteria, the poisons they secrete, toxic wastes, etc.

The thyroid gland was also found by Sajous to be the source of a substance which has been receiving considerable attention of late—Wright's "opsonin," known to sensitize bacteria and render them vulnerable to the attacks of phagocytes—those white cells or leucocytes of the blood and lymph which act as the body's scavengers and do so much to protect it against infectious diseases, as shown by Metchnikoff. This introduces another practical point of the highest importance connected with Sajous's discoveries, viz., the functions of the leucocytes.

The Leucocytes.—The white cells of the blood have been given several different rôles by physiologists, but Sajous was the first to show their true function: the identity of that which causes them to act as scavengers; to appear in great numbers in the blood under certain conditions, normal and morbid; to contain numerous digestive ferments, etc. He showed that their rôle in the body was to take up or "engulf" food-products of any kind, both in the intestinal canal (after the foods had been partially digested in the stomach and intestine) and in the blood and other body fluids; to convert these food-products into *living* granulations (through the adrenal principle which their ferments contain), and to transport them to the tissue-cells. Sajous thus contributed another great advance in our knowledge of cell-life: not only did he show the identity and source of the dynamic principle which sustains life, as previously stated, but also the process through which *our foods become endowed with life,* and, moreover, *the manner in which our tissues are built.*

The practical bearing of these discoveries is now made to appear: certain leucocytes (70 per cent. of the aggregate of white cells) are scavengers merely because they convert food-products, disease-germs, broken-down cells, etc., into tissue-cells. Now, when the vital process is below par, the body is vulnerable to disease: the scavenger cells are themselves unable to digest bacteria, and it is not the nutrient, tissue-forming granulations which they carry to all parts of the body, but living disease-germs. In the light of Sajous's discoveries, when a patient is treated judiciously this cannot happen, since, as previously stated, several of our well-tested remedies are able to raise the vital process to its fullest power; as the scavenger leucocytes form part of the body

as a whole, they likewise acquire their full power when proper remedies are administered and are thus able to kill all bacteria they might ingest, convert them into tissue-granulations, and arrest disease.

Comparison with the prevailing doctrines shows a marked contrast. Pneumonia, for instance, is regarded by Osler as a "self-limited disease," which means that medicinal treatment is useless. In the light of Sajous's findings this is tantamount to a death-certificate, since the pneumonia germs are thus allowed to multiply freely and kill the patient. He submits ample evidence attesting to the fact that pneumonia, as well as all other scourges of humanity, *can be checked by remedies which enhance the body's auto-protective functions.*

The germ-destroying leucocytes do not represent the only recourse available by the body when it is exposed to disease. These cells constitute only the first line of defence, as it were. The blood-plasma itself, as shown by many investigators, is also a powerful bactericidal and antitoxic agent. But what is the origin of the substances which endow the fluid portion of the blood with these defensive properties? This constitutes another of Sajous's discoveries.

Auto-antitoxin.—As everyone knows, the mortality of diphtheria has been decreased to a remarkable extent since antitoxin has been used in its treatment. But the source of antitoxin in the body of the animal from whose blood it is obtained, as well as its chemical composition, has remained obscure. Sajous solved both of these problems. He showed that antitoxin contained (1) the oxygenized adrenal secretion (adrenoxidase) previously referred to, which, as the oxidizing (albuminous) constituent of the blood, is constantly present therein; (2) a ferment derived from the pancreas, trypsin; (3) a body rich in phosphorus, nucleo-proteid, derived from certain leucocytes; and (4) the thyroid secretion, which he termed thyroidase (opsonin). The adrenals, pancreas, leucocytes, and thyroid thus proved to be the source of diphtheria antitoxin—and, in fact, of all other antitoxins.

This suggested a line of research which brought out a discovery of even greater practical importance: If by inoculating an animal, the organs referred to could be caused to produce antitoxin by increasing the functional activity of these organs, could we not by means of our remedies also stimulate these organs, flood the blood with auto-antitoxin, and thus check a disease? A prolonged study of all the phases of the question enabled Sajous to answer this question affirmatively and to formulate the general principle that "immunizing medication is the foundation of rational therapeutics;" in other words, that we should regard as the fundamental purpose of our efforts to cure disease, the use of remedies which, by increasing the functional activity

of the organs that produce antitoxin, enhance correspondingly the bactericidal and antitoxic efficiency of the blood. This, he showed also, was the effect produced by those germs, toxins, poisons, etc., which are capable of evoking a defensive reaction in the body, as manifested by fever.

Sajous describes in detail all the diseases that are most fatal to mankind and shows conclusively that wherever cure had been effected by remedies, it was through agents which, by stimulating the organs referred to, increased the blood's asset in *auto-antitoxin*—the name given by him to the antitoxin which our body produces to antagonize disease.

But how does auto-antitoxin destroy pathogenic organisms, the toxins they secrete, poisons, toxic products of metabolism, etc.? Sajous shows that this differs in no way from the process of digestion, and that if auto-antitoxin is present in excess in the blood, the red corpuscles themselves may be digested (hæmolysis). As to the process itself, the explanation he submits is based on the well-known fact that ferments are active, up to a certain limit, in proportion with the temperature to which they are exposed. When the temperature is normal, the ferments are active just sufficiently to carry on normal functions; when it is raised, their digestive activity is increased accordingly. Now, in the blood, the temperature is raised whenever its supply of adrenoxidase (the oxygenized adrenal secretion) and the nucleo-proteid granulations (supplied by leucocytes) is increased, owing to a reaction between the oxygen of the former and the phosphorus of the latter. Heat-energy being liberated in excess, the digestive activity of the ferments in the blood (which gives it its bacteriolytic and antitoxic properties) is correspondingly increased.

Yet, how are these germ-killing and poison-destroying substances caused to appear in the blood? How do poisons awaken the defensive reaction of the body?

The Pituitary Body.—Located on the very top of the spinal column in the sella turcica, immediately below the brain, protected on all sides with the utmost care, lies this organ. To its rôle in the economy a recently published text-book of physiology devotes seven lines! Indeed, beyond the fact that it is supposed to provide some sort of a secretion (the purpose of which has never been found), nothing is known as to the actual rôle of its anterior lobe; while its posterior lobe has been relegated to the rank of a vestigial remnant. Sajous demonstrates not only that this conception is false, but that the pituitary body in its relations to the functions of the body at large is even more important than the brain itself. None of these functions are impaired when the cerebral hemispheres of an animal are removed; all cease, however, when the whole pituitary body is submitted to the same ablation. The brain, as the

organ of mind, can utilize the spinal system, with which it is connected, to execute its mandates; but the spinal system is also supplied with its own brain, the pituitary body, which Sajous terms the *"somatic brain,"* viz., the governing organ of all vegetative functions. He shows, moreover, that this "somatic brain" contains *a delicate organ whose mission is to protect the body against disease.*

In his first volume, Sajous had advanced the view that the anterior pituitary body was a sensitive organ which perceived, as it were, the presence of any adventitious substance in the blood. The existence of such a structure has since been confirmed independently in Europe, Gentès having found histologically therein a sensory structure resembling the olfactory area of the nasal cavity. Dr. Sajous's conception is readily explained: When the blood circulating in the anterior pituitary body contains any abnormal substance—a drug, a poison, a toxin, etc.—it affects this sensitive organ just as odoriferous particles do the olfactory area. Sajous studied this organ in the animal scale, through comparative morphology, and found it in all animals down to such low forms as mollusks, where it bears a suggestive name given to it by zoölogists, viz., the *test-organ,* or *osphradium,* and is known by them to test the water ingested by these lowly beings.

But how, in the higher vertebrates, including man, does this test-organ protect against disease?

Sajous found, as previously stated, that the adrenals were provided with a center situated at the base of the brain. This, he subsequently ascertained, was a nucleus of cells in the posterior lobe of the pituitary body, which nucleus received nerve-fibers from the sensitive test-organ referred to above. Now, the manner in which any poison or toxin can increase general oxygenation becomes apparent: it excites the test-organ, and this structure, in turn, through nerve-paths (passing by way of the base of the brain, the bulb, the cord, the sympathetic and splanchnic nerves) increases the functional activity of the adrenals. Thus the blood is provided with an excess of *adrenoxidase.* True, this is but one of the constituents of the body's protective substance, autoantitoxin, but the manner in which the other components of the latter are formed is readily apprehended: the metabolism of all organs being rendered unusually active by the excess of adrenoxidase in the circulating blood, the formation of leucocytes is activated (leucocytosis) and the proportion of *nucleo-proteid,* their product, in the blood is correspondingly increased. The secretory activity of the pancreas being also stimulated by the excess of adrenoxidase, more *trypsin* is produced; and we thus have the three components

of auto-antitoxin: the oxygen-laden adrenoxidase and the phosphorus-laden nucleo-proteid to supply the increased heat-energy required to enable the trypsin both in the phagocytes and in the blood to destroy bacteria, their toxins, or any other poisonous agent which the blood may contain.

This is not all, however; as shown by Sir A. E. Wright, the bacteria must be prepared for the phagocytic feast. Sajous, as previously stated, has discovered that the thyroid and parathyroids were the source of Wright's "opsonins," *i.e.*, thyroidase. Now, the nucleus through which the adrenals receive their stimulating impulses from the test-organ is also shown by Sajous to transmit stimulating impulses to the thyroid apparatus. When disease-germs invade the blood, therefore, their toxins, by exciting the test-organ, cause the blood to be provided with *thyroidase* (opsonin) to sensitize the germs, and with *auto-antitoxin* to destroy them.

The grave mortality from all diseases in the young as well as in the old shows, unfortunately, that although our body is endowed with protective functions, these are often inadequate to prevent, or even arrest, disease. This is where Sajous's labors are to prove most prolific in results, since they have demonstrated conclusively that *by means of the remedies in constant use among physicians,* the protective mechanism can be activated sufficiently to protect the patient. Pasteur's prophylactic treatment against rabies, Wright's inoculations, bacterial vaccines, etc., are but examples of the protection afforded through agents which stimulate the test-organ, this action differing in no way from that of the drugs referred to, the action of which can, besides, be more readily controlled. All these measures cause the blood to be flooded with thyroidase (opsonin) and auto-antitoxin. Hence the fundamental principle Sajous establishes—that *"immunizing medication is the foundation of rational therapeutics,"* which, as he shows by a comprehensive study of cancer, tuberculosis, syphilis, Asiatic cholera, cholera infantum, bubonic plague, epilepsy, puerperal eclampsia, and many other foes of mankind, is as applicable to the most virulent diseases as to the more benign. He not only points out the meaning of the *vis medicatrix naturæ,* but shows us how we can increase its efficiency and thus master disease.

Those who, like the writer, have availed themselves of Sajous's teachings in their daily work, have been able daily to appreciate the strength of his position, the power of the weapon or key he has placed in their hands, and the renewed confidence he thus inspires in practical medicine.

Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

OPSONINS, OPSONIC TECHNIQUE, PHAGOCYTOSIS, AND BACTERIAL THERAPY.

BY NATHANIEL GILDERSLEEVE, M.D.

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THE opsonic theory of Wright, which has attracted the attention of the medical profession for some time, a theory full of promise and offering many problems for research, has aided us not a little in diagnosing and treating certain diseases. The technique required for the performance of the treatment is extremely difficult, and must be carried out with such great care and exactness and consumes so much time that none but those who have had a rather extended laboratory experience can hope to get consistent results. It is to be hoped that we may in the near future discover some way of simplifying the methods, so that the treatment can be carried out by the general practitioner and specialists in certain lines; but until such methods are discovered the therapeutic application of bacterial vaccines must remain in the hands of men specially trained in laboratory manipulations. The above facts will, I am afraid, cause the profession to allow to fall by the wayside, as has been done with many things in the past, extremely valuable therapeutic agents. There are now many dissenting voices raised against the opsonic theory. Some of our scientists have condemned the whole theory; others the methods for obtaining the index, as being inaccurate and consuming too much time; while some of us have obtained consistent results only after spending long, tedious hours acquiring the technique.

The writer has had many calls for the opsonic technique, and in writing this article on opsonins and bacterial therapy chose to include it, at the expense of making the article more tiresome than it would otherwise be, realizing that most of what is said has been published before, although much has been said regarding the opsonic treatment and comparatively little on technique. There are many apparently minor details in the manipulations that greatly influence the results: some of these are individual and must be worked out; the others I have here tried to give as clearly as possible. It is advisable for one desiring to take up bacterial therapy to work for some time in acquiring a

nicety of technique before attempting any treatment. An excellent illustrated article by Miller will be found in the Therapeutic Gazette for March 15, 1907. These illustrations show in many respects better than can be described certain of the apparatus required. No attempt is made in this communication to give references; these are voluminous and, in an article of this kind, appear to the writer to be superfluous.

Wright's theory brought prominently before the scientific world a phenomenon which many scientists had, following the brilliant work of Ehrlich in advancing his theories regarding immunity, lost sight of as being an extremely important factor in immunity, namely, the phagocytic theory of Metchnikoff. Metchnikoff demonstrated that many cells possess the property of taking up and destroying or digesting various other cells and substances, and that some cells of the body, notably certain of the blood-cells, possessed the power of digesting bacteria. He designates as macrophages the large mononuclear cells of the blood and large cells with indented nuclei found in exudates; and claims in one communication that giant cells are but polynuclear macrophages; polymorphonuclear leucocytes he calls microphages. In the phenomena of phagocytosis *in vivo* and *vitro,* so far as bacteria are concerned, the microphages play by far the most important part. Not only are they present in greater numbers, but they possess a greater phagocyting capacity than do the other cells; the lymphocytes rarely, if ever, act as phagocytes. Phagocytosis, which the writer has always regarded as being of great importance, bids fair to again occupy the place it deserves among the theories and facts regarding immunity.

Some years ago it was demonstrated that, when the serum was removed from the blood by washing, the leucocytes lost their property of phagocytosis; but when fresh serum was added they were able to ingest the bacteria. It was assumed that some undefined substance in the serum acted upon the leucocytes, stimulating them to exert their phagocytic action; these hypothetical substances were called by the French investigators stimulins. Some time later, A. E. Wright demonstrated that washed leucocytes were incapable of exerting a bacterio-phagocytic action; when serum was added to the leucocytes, the phagocytic property returned; further, that when bacteria were treated with serum, and freed from it by repeated washings, washed leucocytes were capable of ingesting such bacteria, thus proving that, contrary to the assumption that the serum stimulated the leucocytes to exert their phagocytic action, some substance in the serum acted upon the bacteria and prepared them for phagocytosis; these substances he named opsonins.

Opsonins may be defined as substances normally existing in the tissues

which have the property of acting upon bacteria, preparing them for phagocytosis. These substances are decreased in many cases, not only in infectious diseases, but in other conditions where there is a marked disturbance of metabolism with a lowered tonicity of the tissues; they are frequently found to be increased, for the organism causing the disease, after an attack of certain infections; they can be increased by immunization. Very little is known regarding the essential nature of opsonins. Their action leads one to consider them in the same category as enzymes. Some place them in the same position as Ehrlich's receptor of the second order, possessing a combining and an enzyme-like group; it is possible to remove all of the opsonin from a serum by adding to such serum sufficient bacteria to combine with it; their activity is destroyed by heat; reduced and destroyed by certain salts and other chemicals; they decrease quite rapidly in the serum on standing.

Regarding their constitution we know absolutely nothing; and can but theorize on the mode of their production in the tissues. The statement has been made by some that these substances are absolutely specific; others claim that their specificity is limited; that they possess some degree of specificity is undoubted. This is more marked in immunized animals than in normal. Further research is required and more regarding their nature must be known, before the question of specificity can be absolutely decided one way or another.

The opsonic index is the opsonizing power, *i.e.*, the power of preparing bacteria for phagocytosis, of an individual's serum as compared with one or, better, several normal sera taken as a unit; it is obtained by dividing the phagocyting index, *i.e.*, the number of bacteria ingested per leucocyte, of the serum to be tested by the phagocyting index of the normal. The technique of the methods for determining the index is difficult, and time-consuming. Some, as before stated, have obtained very consistent results, others claim that their results are not at all consistent, and that the index is of no value; the different opinions formed may be due to variations of conditions and technique under which the experiments were performed. The writer has obtained very consistent results and would not employ bacterial vaccines in treating cases without controlling the inoculations in accord with the index, until we find some other simpler and accurate method of controlling our work.

Apparatus Necessary for Opsonic Determination.—An opsonizer: this consists of a copper box with two openings in the top, one for a thermometer and the other a thermo-regulator. Through this box are soldered crosswise, horizontally, brass tubes $^3/_8$-inch inside diameter, giving it somewhat the appearance of a tubular boiler. The size of the opsonizer and number of tubes can be varied to suit the taste and requirement of the operator. One ten

inches high by 12 inches wide by 18 inches long, with 24 tubes, is large enough for several workers, as pipettes can be inserted from both sides; while for ordinary use a smaller one, with from 6 to 12 tubes, will be of sufficient size. This apparatus can be made by any tin or copper smith. This is filled with water or heavy paraffin oil, fitted with a safety burner and thermo-regulator, and kept at a temperature of 37 degrees C. Where one does not employ it constantly, the smaller sizes can be heated by an alcohol or gas flame, and readily kept at 37 degrees C. for a few hours. The ordinary bacteriological incubator can be used in place of the opsonizer, but it is not nearly as satisfactory; opening and closing the doors constantly, as must be done when placing in the different pipettes, causes undoubtedly some fluctuation in temperature, and the incubation period cannot be gauged with the same degree of exactness. *A high-speed centrifuge* fitted with small tubes for washing the blood and separating the leucocytes. This must be perfectly balanced so as to run without vibration. A *small shaking apparatus* will be found to be not only a convenient, but almost necessary, part of the outfit. This is employed in shaking the emulsion to break up clumps and chains and yield a homogeneous suspension. *Wright's capillary pipettes* made of glass tubing $^3/_{16}$ to $^1/_4$ inch in diameter; pieces about 6 inches long are heated in the middle in a Bunsen or blast flame and drawn out to a diameter of about $^1/_{32}$ inch. This gives us pipettes the capillary portion of which is from 5 to 6 inches long, and the other end the original diameter of the tube, which can be fitted with a small rubber bulb about the size of that on a medicine-dropper. *Serum pipettes,* for collecting and separating the serum. These are about $2^1/_2$ inches long, made of thin glass tubing $^1/_8$ inch inside diameter, one end drawn out straight and cut off, the other drawn out and bent around so as to form an angle of about 45 degrees with the side of the tube. The blood is allowed to flow from a puncture in the finger into curved end of tube, and when sufficient has been obtained the straight end is heated and sealed. Care should be taken not to heat the blood. Other apparatus required will be mostly found in the armamenture of the ordinary laboratory, *i.e., blood-stylet,* of the type employed in obtaining blood for ordinary purposes. The glass stylets advocated by some are not, in my estimation, a proper instrument to employ. *Miscroscope,* the ocular of which is fitted with a thin disk made of high-grade glass, ruled in squares about 2 millimeters in size, to facilitate counting the corpuscles. Rubber bands $^1/_2$ x 6 inches, sterile bottles, tubes, glass pearls, slides, coverglasses, etc. Reagents required are 0.85 per cent. sodium chloride solution and a solution composed of sodium citrate, 0.5 gram; sodium chloride, 0.85 gram; water, 100 cubic centimeters. The above solutions should be sterilized,

to remove and prevent the growth of extraneous organisms, which might seriously interfere with the experiments. Stains employed are preferably some modification of Romanowski's stain. Dr. Homer Wright's blood-stain is one of the best and most convenient, or a solution of alcoholic eosin in c. p. methyl alcohol, using methylene blue as a counterstain; and, for tuberculo-opsonic preparations, carbol fuchsin.

Further, we require a bacterial emulsion, washed leucocytes, serum from patient, and normal sera, preferably from three or four normal individuals; if the serum of but one healthy person is used, it should be compared every few days with several other normal sera, and if more than a very slight variation is noted the several sera employed.

The bacterial emulsion is prepared by cultivating the organism on agar for eighteen to twenty-four hours; washing it off with sterile salt solution; emulsifying in a sterile bottle or tube containing glass pearls; some bacteria are readily emulsified when shaken by hand, while others must be placed in a shaking apparatus, the latter procedure being preferable in all cases. Some grind the organisms between two glass plates. This is manifestly not as neat a method; there is a greater chance for contamination and danger of disseminating bacteria, but sometimes it is necessary to resort to this procedure, especially when working with the mycobacterium tuberculosis, which, however, should be killed before such treatment is attempted; this organism must of necessity be taken from cultures several weeks old; homogenized cultures are preferred by many for this purpose. After emulsifying and diluting the suspension, it is centrifugalized for one or two minutes, to remove any clumps that may remain. The density is then determined by opsonizing with normal serum to obtain its so-called phagocyting index, or by comparing it with a 5 per cent. barium sulphate standard (McFarland's nephelometer), and diluted to the proper strength; it is stated that it should be of such density that when opsonized with normal serum each leucocyte will ingest from five to eight of the ordinary bacteria, and from two to three tubercle organisms. Some prefer a suspension of somewhat greater strength; the counts are more difficult, but the results are, it is claimed, more uniform.

Washed leucocytes are obtained by filling two of the small centrifuge tubes three-quarters full of citrate solution; then wrapping the finger with a rubber band so as to cause congestion at the end, make a puncture with a stylet at the root of nail or side of finger, and allow the blood to fill the citrate tubes. It is then mixed by inverting tubes several times, and centrifugalized; when the corpuscles are well packed and the supernatent fluid is clear, remove the solution carefully, so as not to disturb the corpuscles, fill

with 0.85 per cent. sodium chloride solution, and again centrifugalize. It is best to repeat the latter process twice, to make sure that all of citrate and serum has been washed out; remove the salt solution carefully, to avoid disturbing the layer of leucocytes which will have collected on the surface of the sediment; the last drops are best removed by inclining the tube and by inserting a capillary pipette at the upper part of meniscus. The upper layer of sediment, containing the leucocytes, can be removed with a clean capillary pipette and placed in a small sterile tube. This is then thoroughly mixed by drawing in and out of the pipette, being careful to avoid admixing air-bubbles. This so-called leucocyte cream will contain with the leucocytes some erythrocytes. These appear to be advantageous, as better results are obtained when they are present than when leucocytes alone, the true leucocyte cream, are employed.

Serum is obtained by puncturing the finger, and allowing the blood to flow into the curved end of the blood-pipette, until a sufficient quantity is obtained; the tube is then grasped lengthwise between the thumb and forefinger and the point of straight end warmed and sealed in the flame. As the end of tube cools the blood in curved end is drawn into the tube. The tube should not be held by the end, as one will then usually heat too much and injure the serum. The tube can be placed in the opsonizer or incubator for fifteen to twenty minutes, when the serum will usually be separated; if not, the tubes can be centrifugalized for a few moments. When the serum is required, the tubes can be notched on one side with a file and readily snapped off with the fingers or by touching with a hot glass point.

Method of Determining Index.—The opsonizer should be placed on a table to the right or left of operator; sera, leucocyte cream, bacterial suspension and all necessary apparatus in front; all within reach as one must work quickly and accurately, and each tube be timed as it is placed in the opsonizer. A mark is made with a paraffin pencil on the capillary pipette, three-quarters of an inch from the end; the rubber bulb is connected and the mixture made by drawing substances into the tube in the following order: 1 volume of leucocytes, a bubble of air, 1 volume of bacterial suspension, a second bubble of air, 1 volume of serum—some add to this a second volume of leucocytes, varying the technique in this respect, with excellent results. The writer has found this of value especially where the stronger bacterial suspension is employed. The contents of the pipettes are then emptied into the concavity of a concave slide and thoroughly mixed by drawing in and out of the pipette several times, care being taken to get rid of all air-bubbles, as this interferes to some extent with phagocytosis; after mixing, the mixture is drawn into pipette, the end

sealed quickly, and placed in the opsonizer, where it is left for exactly fifteen minutes; some incubate for twenty minutes—this makes little or no difference. The important point to bear in mind is that all tubes, the preparations to be tested and controls, must be opsonized for the same length of time, as a matter of a few seconds frequently makes more difference in the results than one would imagine. The point of pipette is then broken off and the contents expressed on one end of two or three clean glass slides and spread evenly over the surface by placing the end of another slide in contact with the drop and drawing it over the first; this, if properly done, yields a thin even smear. Some employ a specially made spreader, but this will be found unnecessary, as one can make perfect smears with a little practice by using the end of an ordinary slide. The preparation is allowed to dry in the air, and stained with Wright's or some other blood-stain; if one should employ the ordinary aqueous staining solutions, the preparation must be fixed by treating for a minute with methyl alcohol. The technique for staining is the same as for ordinary blood-films with which anyone who will undertake the work is familiar. Tuberculo-opsonic preparations can be stained with carbol-fuchsin, after fixation with 95 per cent. ethyl alcohol or methyl alcohol; decolorized with 30 per cent. nitric acid, and counterstained with methylene blue; or very clear preparations can be obtained by Ohlmacher's method. (American Medicine, February, 1907, page 74.)

The number of bacteria ingested by one hundred leucocytes are counted in each preparation, *i.e.*, those made with patient's and normal sera used as a unit. Some investigators pool the normal sera and make but one unit preparation. This is not a good practice, as the pooled sera preparations vary frequently quite markedly from those made with each serum separately, and more accurate results will be obtained by using one normal serum, controlling it every few days with several others, if one cannot employ several constantly. The reason for the variations in the pooled sera has received no satisfactory explanation. After counts are made, divide the number of bacteria ingested per leucocyte (phagocyting index) in the preparations made with patient's serum, by the number ingested per leucocyte in those made with the normal sera, which gives the opsonic index.

Many will meet difficulties in making these preparations. One great source of trouble to beginners is controlling the pipette so as to obtain exact amounts of each ingredient in making the mixture. Accuracy can only be attained by practice. The pipette can be handled best by grasping between the middle and third finger, and the bulb between the thumb and index finger.

What is the value of the opsonic index? It cannot be claimed by any one that the methods of obtaining the index are absolutely accurate. There are, apparently, difficulties and variations which cannot be absolutely eliminated, but with a careful manipulator this should not amount to over 5 per cent. Careless technique, even in what are apparently minor details, will cause marked errors. If a certain definite mode of operation is adopted and carried out in all instances, assuming that inconsistent results are the fault of the operator and not the method, in the end good results will be obtained. The index is of value for diagnostic purposes, for regulating size and properly interspacing doses of the bacterial vaccines; and one should not attempt to treat a patient without determining the index at least once, better twice, if possible, before inoculation, and not reinoculate until index shows that positive phase has been established and a slight decrease occurs.

Simon and Lamar (Johns Hopkins Medical Bulletin, volume xvii, page 27) describe a method of estimating the opsonic content of blood and other fluids. They employ a series of serum dilutions. This method is very ingenious, and in the hands of some investigators has yielded good results. The writer has had no experience with this method, having chosen to confine himself to the one technique until perfectly sure of the results.

Bacterial vaccines are the specific organisms concerned in producing a disease, either dead or in an attenuated form employed for the purpose of immunizing against and curing the disease. Some criticize the employment of the term vaccines being applied to these emulsions, claiming that it should be applied only to small-pox vaccine. This is true looking at it from an etymological standpoint, but the same can be said of many other terms employed not only in medicine, but in other sciences. This name has been applied to the killed and attenuated bacteria employed as immunizing agents, and in the treatment of certain diseases, since they were first used for such purposes, and it is too late to attempt to change it now.

Before attempting to treat a patient with bacterial inoculations, one must determine positively the cause of infection; whether or not we have a mixed infection; obtain if possible an autogenous culture, *i.e.*, one from the individual to be treated; and finally determine the patient's opsonic index. In most infections in which this treatment is employed, the organisms are readily isolated from the lesions, and after being obtained in pure culture can be employed in preparing the vaccine. One trained in bacteriological methods can usually isolate the ordinary infective organisms inside of twenty-four or forty-eight hours; if for any reason it is deemed necessary to inoculate

sooner, a vaccine prepared from another strain or a mixture of several strains of the same organism may be employed. Every one should prepare his own vaccines, and so far as possible employ autogenous vaccines. In treating cases of tuberculosis Koch's T. R. is employed at the present time. This is somewhat difficult to prepare and can be obtained from various sources.

Preparation of Vaccine.—The organism isolated from the case to be treated, or a culture of a corresponding organism, providing we are dealing with one the isolation of which requires too much time, is cultivated on agar slants in large tubes, or, as the writer is in the habit of employing, flat bottles in which the agar has been sterilized and solidified in a slanting position, for from eighteen to twenty-four hours for the ordinary bacteria. The organisms are washed off the surface of the agar with sterile 0.85 salt solution, emulsified, preferably, by putting in sealed tubes or sterile glass or rubber stoppered bottles containing glass pearls, and agitating for some time in a shaking apparatus. Some bacteria are readily separated, others require some time. The chains of streptococcus pyogenes are frequently completely broken up only after prolonged agitation. The number of bacteria per cubic centimeter may be estimated now, or after they have been killed, by Wright's method or by counting with a Thomas Zeiss hæmocytometer in the same manner as blood corpuscles, using a Turck cell fitted with a special cover glass having a thin center surrounded by a thick wall, designed for counting blood-platelets, which enables one to use a high-power dry lens.

The technique of Wright's method is as follows: Draw into a Wright pipette two volumes of salt solution, one volume of the vaccine to be tested, a third volume of salt solution, and, lastly, one volume of blood directly from the finger. These are then thoroughly mixed by emptying in the concavity of a slide and drawing in and out of the pipette several times; the mixture is then spread on slides, dried and stained, and the number of bacteria and erythrocytes in at least 100 microscopic fields counted, and, assuming that there are 5,000,000,000 erythrocytes per cubic centimeter of blood, or better by making an accurate blood-count of the individual whose blood is used, one can by a mathematical deduction approximately obtain the number of bacteria per cubic centimeter. A beginner is apt to encounter difficulties in making these preparations; first, they use too dense an emulsion, which can be obviated by employing a McFarland nephelometer as a standard; again, the writer has been approached by several with the statement that the blood partially coagulated in making the mixtures and others could not obtain an even smear. If the substances are drawn in the pipette in the order given above, this will not

occur; but the tendency is to take the blood first, emulsion second, and salt solution last, when one will almost invariably get a poor preparation.

The bacteria are now killed by adding to the emulsion 0.5 per cent. tricresol, lysol, or 0.2 per cent. of c.p. phenol (crystalline), diluted to the desired strength, then heated for varying lengths of time at 60 to 65 degrees C., according to the thermal death-point of the organism. For the ordinary organisms the time of heating may be put down as follows: micrococcus aureus, albus, and pneumococcus, 65 degrees for one hour; streptococcus and gonococcus, 60 degrees for one hour or 65 degrees for one-half hour; organisms of coli group, 60 degrees for one hour.

It is manifestly a proper precaution to make subcultures from the vaccines after they have been heated, to determine positively as to their sterility. After the emulsions have been sterilized they may be sealed in glass tubes or placed in sterile bottles, over which is drawn a sterile rubber diaphragm which can be punctured with a sterile hypodermic needle when it is desired to withdraw some of the vaccine. The hole made by the needle can be readily sealed with rubber cement or by placing over it a drop of some rubber solvent which rapidly evaporates. The sealed tube is to be preferred as there is then no risk of contamination, and a small amount can be placed in each tube and the remainder discarded after one dose has been taken out. The writer has employed small bulbs or ampullas of glass each of about three cubic centimeters capacity. One end is drawn out, and after being filled with vaccine by means of a sterile capillary pipette this end is sealed and can readily be broken off for the insertion of a hypodermic needle when occasion demands. These are easily made from glass tubing, after a little experience.

The dose of vaccine to be employed varies according to the organism employed; the degree of depression of index; the type of infection; age and condition of the patient, not forgetting that we have individual idiosyncrasies in reference to these as well as to the action of other therapeutic agents. In many instances the dose employed has been too large and some of the poor results reported are undoubtedly due to this fact; it is always best to start out with a small dose and increase. No absolute rules can be laid down at this date regarding the size of the dose; in general it can be said that smaller doses should be employed: when the index is very low than when moderately depressed; in general, if employed at all, than in local diseases; in acute than in chronic conditions; in children and individuals markedly depressed and in poor condition than in adults and the more robust. The doses of the various vaccines range about as follows: micrococcus aureus and albus, 200 to 600 million; strep-

tococcus, 10 to 50 million; gonococcus, 5 to 20 million; coli and proteus, 50 to 500 million; tuberculin (t.r.), $^1/_{3000}$ to $^1/_{1000}$ of a milligram; larger doses are sometimes employed, but it is advisable to use great caution in regard to such doses.

Phenomena Following the Injection of a Vaccine.—Several hours after the injection of a vaccine there will usually be a rise of temperature of from one to three degrees; accompanied by a feeling of malaise; this soon returns to normal. In from one to three days the site of inoculation frequently becomes somewhat reddened and indurated, and the site of disease, if local, usually aggravated within the first twenty-four or forty-eight hours; this soon clears up, and as a rule the condition shows improvement. When the index is taken twelve to twenty-four hours after the inoculation it will, as a rule, be found to be lower than before. This condition, called the negative phase, may disappear within forty-eight or seventy-two hours or last for several days or weeks, and is followed by a gradual rise in the index, called the positive phase. When the index has risen above what it was before inoculation, and a slight secondary drop occurs, a second dose may be given; this, if negative phase has not been too prolonged, may be larger than the first. This will be followed by a second negative phase not as low, nor, as a rule, prolonged as the first. Further inoculation must not be given until after the second positive phase is well established and a slight diminution occurs; the interspacing of the doses depends not only on the index, but to some extent on the condition of the disease.

Value of Bacterial Vaccines.—Bacterial vaccines have been employed not only as therapeutic agents, but in many conditions as prophylactic measures, notably against bubonic plague and typhoid fever in man; and anthrax, glanders, tuberculosis u.s.w. in lower animals; they are employed in certain conditions for diagnostic purposes. In the treatment of some infections they are of no value; in fact, may do a great deal of damage if not used intelligently. The question of when and how to use vaccines is constantly being asked. Let us briefly consider the infections from certain standpoints. Infections may be conveniently divided into local and general; the local into circumscribed and diffuse; the general into toxæmia and bacteriæmia, the latter including pyæmia and septicæmia. Many diseases under the above headings are acute, tending to terminate within a short period in recovery or death; others beginning as an acute condition become chronic. It is in the treatment of local subacute and chronic diseases that the vaccines are of the greatest value. Wright classifies bacterial diseases somewhat as follows: (1) Strictly localized, *i.e.*, shut off from the blood and lymph. In this group belong furunculosis,

lupus vulgaris, tuberculosis, u.s.w., usually chronic infections, in this class the opsonic index is almost always below normal, due to an absence of immunizing stimuli. (2) Diseases in which the bacterial process is but loosely cut off, especially from the lymph, in these, usually acute, the invading organisms from time to time gain entrance to the circulation, and the opsonic index may be normal and either above or below normal. (3) Those in which the infection is in the blood-stream, in this class we find the acute infectious diseases, the index is generally below normal. Manifestly, one would not attempt to treat a toxæmia by vaccination, neither would we care to add insult to injury by injecting bacteria, even dead ones, into individuals affected with many acute infectious diseases. This, to any one who is at all familiar with infections and immunity, would be an absolutely inexcusable procedure. There are some cases of general suppurative diseases in which we are justified in employing inoculations, but one must not be disappointed if favorable results are not obtained.

In selecting a point for inoculation, one is governed to some extent by the site of disease, selecting a position somewhat removed from the lesions. Inoculations are best made by employing a small hypodermic syringe, making the vaccine of such strength that not over 1 to 1.5 cubic centimeters are required. The inoculation should be made, not by plunging the needle deep into the tissues, but inserting it into the subcutaneous tissue; the fleshy part of the back and buttocks should, in most cases, be our field for operation. The writer, when possible, and that is in most of his cases, selects a point just below the angle of the scapula.

Staphylococcus Infections.—In sycosis vulgaris the results of inoculation are frequently surprising; cases of this disease which have resisted stubbornly all treatment for a long period rapidly improving under the bacterial inoculations. The writer has not seen a case that was not apparently cured; whether or not the disease will return, as some claim, time only will tell. There is certainly not more, and in all probability less danger of its returning than when treated by other methods.

Acne Vulgaris.—Some cases of this condition improve quite rapidly under this treatment, others are but slightly benefited, while yet others are apparently not influenced by the inoculations alone. The writer has treated cases with inoculations alone, with removal of the lesions by means of a comedone extractor, cured at least for the time being; others, some extremely aggravated cases, that improved rapidly for a time, then came to a standstill, and it was necessary to supplement this treatment by other therapeutic measures (Roentgen rays, etc.). In this condition a mixed vaccine of aureus and albus

is usually employed. It must be borne in mind that there are undoubtedly certain factors other than the pyogenic cocci to be considered in treating this condition. These organisms cannot be looked upon as being the primary cause of the disease, which depends to a great extent on some obscure underlying cause. A short bacillus or bacterium has been described by Unna, Sabouraud, and Gilchrist as playing an important part in the production of the lesions. A vaccine prepared from this organism, which according to some investigators is readily isolated, may prove to be of great value in treating acne, combined with albus or a mixed albus and aureus. It may be said in this connection that while vaccines are undoubtedly of great therapeutic value in this disease and should be employed, one should supplement this with other treatment when the condition is at all stubborn, as it usually is.

The reports of results in the treatment of furunculosis are somewhat conflicting. Some have obtained good and consistent results; others have had indifferent success. In some cases where furuncles are forming they have been aborted by the use of small doses of the aureus vaccine; many cases of recurrent furunculosis have recovered following this treatment; these cases must undoubtedly be handled carefully, beginning with small doses and the index closely watched, and a second dose not given until the positive phase is well established. It must be remembered that while the majority of cases of furunculosis are caused by the micrococcus aureus, all are not, and the special organisms should be isolated from each case before any attempt is made to inoculate. Favorable results, as a rule, attend the vaccination of individuals suffering from carbuncles. What has been said regarding the dosage in furunculosis should be considered even more carefully here. Many cases of various types of pyogenic skin affections, which are refractory to ordinary treatment, readily yield when the inoculations are resorted to. In many staphylococcus infections of joints and bone (ostitis and osteomyelitis) inoculations produce marked improvement and even cure.

Streptococcus Infections.—Some have reported success in the treatment of streptococcus septicæmia by employing streptococcus vaccine. It would appear that this could hardly be expected, yet there is some experimental evidence to show that subcutaneous inoculation causes a stimulation of the tissue elements with the formation of other antibodies greater than when the inoculation is made into the circulation or peritoneal cavity; there is a possibility of opsonin and other antibodies being formed in the tissues in and surrounding the inoculated area, and acting in the desired manner upon the organisms disseminated throughout the body. Streptococcus vaccine has been employed in the treatment of acute erysipelas, with, as might be expected,

little or no success. One can readily see how the inoculations might be valuable in chronic and recurring erysipelas, but acute erysipelas is one of the last conditions in which we would expect results other than detrimental. In treating local streptococcus infections, especially chronic, such as superficial infections and streptococcus ostitis and osteomyelitis, vaccines are of value.

Gonococcus Infections.—Some good results are reported of the treatment in both acute and chronic gonococcus joint affections. In these cases the dose and index should be carefully considered; occasionally we hear reports of good results following the treatment of epididymitis and orchitis with gonococcus vaccine. The writer has had no experience in treating these cases by inoculation, but one would consider that a large number of cases should be treated and carefully watched before any definite conclusions could be drawn as to the efficacy of vaccines in these conditions.

Pneumococcus Infections.—Reports on the treatment of pneumococcus hydro and pyothorax and some other pneumococcus infections are encouraging. If, as some claim, we can cure pneumococcus, pyothorax, or even cases in which there is a mixed infection, with vaccines, and it seems rational that we should if the cases are seen early enough, an object of great therapeutic value will be attained.

Colon and Proteus Infections.—In cases of colon pyelitis, cystitis, and other colon infections, some excellent results have been reported. The same is true of proteus infections in various parts of the body.

Cases of necrosis following typhoid, pneumococcus, and other infections offer an excellent opportunity for the bacterial therapeutist. These cases, which, as is well known, are frequently refractory to treatment, in many instances are rapidly improved by employing the proper vaccine.

Tuberculosis.—The inoculation work on tuberculosis is being carried on slowly and carefully, mostly by men who have had long experience in treating this disease. The physician who will jump into the treatment of other conditions, without, as it were, looking before leaping, and even many who have studied the opsonic theory closely, are extremely careful and conservative when it comes to treating this disease, due undoubtedly to the bad results attending the promiscuous use of tuberculin when it was advocated as a therapeutic agent a number of years ago. The hesitancy on the part of the profession in this respect is a proper attitude, as great harm can be done by the improper use of tuberculin. In selecting and treating cases of this disease by inoculations, one should be extremely cautious; the dose employed should be very small.

If smaller doses of tuberculin had been used and more care taken, the old tuberculin would not have fallen so completely into disrepute. The writer was handed some reprints by Dr. Frank Fremont-Smith a short time ago. Among them was one of an article which appeared in the Medical Record of October 17, 1891, on the employment of Koch's lymph in the treatment of tuberculosis, in which he states that "the only therapeutic dose is such a quantity as arouses no reactive temperature, every reactive fever being the expression of an overdose." This attracted little attention, coming as it did when so many were beginning to condemn the use of tuberculin as a therapeutic agent, and paying little attention to any articles favoring its employment in any manner. This statement is extremely interesting, coming to light, as it has, at a time when we are again advocating the treatment of tuberculosis by inoculations and employing extremely small doses controlled by the opsonic index. Comparatively little has been done in the treatment of pulmonary tuberculosis, but apparently good results are being obtained in selected cases by a few careful workers. Localized tubercular conditions such as affections of glands, bones, joints, lupus vulgaris u.s.w., offer a better field for treatment, but even here great caution should be observed and extremely small doses employed in the beginning, lest we make manifest a comparatively latent condition. Very favorable statements have been issued regarding the treatment of tubercular peritonitis with tuberculin. In connection with this disease, where there is an accumulation of fluid in the peritoneal cavity, a thought has lately been expressed regarding the cause not only of improvement, but apparent cure of many cases following paracentesis or laparotomy, namely: that these fluids have a very low opsonic content, and that following their removal, fluids of a higher opsonic content are enabled to exert their action upon the local condition.

Mixed Infections.—In many cases of tubercular bone and joint diseases with breaking down of the tissues and sinus formation, in which we have mixed infection with staphylococcus and streptococcus, with a marked discharge of pus, excellent results can be obtained, after determining the cause of the secondary infection, by treating the patient with an autogenous vaccine; the discharge rapidly decreases and, in many cases, stops entirely, and frequently the sinus closes, cure being effected so far as the secondary infection is concerned. These cases would appear to be those in which, after the secondary condition is removed, treatment with tuberculin (T.R.) would be of great value, and indeed some excellent results have been reported.

Have we reached the limits in bacterial or opsonic therapy? Are there not certain other infections capable of being treated by inoculations? The

idea occurred to me some months ago that tinea sycosis, tonsurans and other forms of fungus infections might be cured if the proper vaccine could be prepared and employed. This was mentioned to some of our skin specialists. Whether any work has been done in this line or not, I cannot say. Nothing regarding it has been encountered in the literature in my possession. There are possibilities in the treatment of favus and blastomycosis. A few good results in the treatment of certain oral affections, notably pyorrhœa, have been reported.

Wright has thus added to our list of therapeutic agents extremely valuable substances in the bacterial vaccines as controlled by the opsonic index. We have expected much from them and in some instances have been disappointed, in many agreeably surprised; but the medical profession is altogether too ready to drop new methods of treatment if they do not get results in every condition on which such measures are employed; and to condemn measures that they do not thoroughly understand or find difficulty in handling. In many respects this work is still in the experimental stage, in others new facts are established, and if we will but employ this treatment with judgment and care, following closely all details, being careful not to jump at conclusions, and become skeptical because we do not always get results, in the end bacterial vaccines will be looked upon by the majority as occupying a highly important place among our agents for combatting disease.

MANAGEMENT OF LARYNGEAL PHTHISIS.

By BEVERLEY ROBINSON, M.D.

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It is curious to note how the pendulum swings from one extreme to another in the treatment of disease. In none, perhaps, is this more evident than in the treatment of laryngeal phthisis. At one time, not many years ago, the daily application of sprays and powders, the local use of pigments of different kinds to the larynx, was the practice of every practitioner who was called "specialist" or acted sub rosa as such. In those days, twenty years ago, the domain of the larynx in pulmonary tuberculosis, when unfortunately it came to the front with pronounced painful or distressing symptoms, usually belonged pre-eminently to the physician with very modest aspirations to be surgical in his methods. Later, there came a period when, thanks to

ultra localization and aggressiveness of our German colleagues, caustics, incisions, scrapings, punchings of ulcers and infiltrations was the order of the day. And this rule of action was followed by many, independently of the condition of the larynx, as to the extent of disease, or indeed as to the more or less advanced pulmonary involvement. In severest cases of laryngeal phthisis, and exceptionally, tracheotomy was advised and resorted to, not merely as a palliative, or a necessity against advanced stenosis, but with a curative end in view. To day, fortunately, we perceive a return to the old order of things—to *rationalism*, such as the elder Flint taught us—man of great and good memory! To him, pulmonary tuberculosis and all its expressions had a tendency to self-limitation. Give the individual only a fair fighting chance of air and food and sunlight, and in 15 per cent. of such cases he would march gradually and surely toward recovery. With the others, the progress of the disease might be slow or rapid—might become stationary at times and again advance, but definite and permanent cure did not result. Has anything new or better been said when we come to regard elaborate reports and statistics of our private or public sanitaria? To return to the management of laryngeal phthisis. Let us recognize that to cure it, in the vast number of instances, is only possible provided that at the same time the pulmonary disease be cured. In such instances usually, the laryngeal complication will be quite limited and, to the common-sense eye, not very serious of itself. Moreover, it will not be attended, as a rule, with that great pain and intense dysphagia which mark those sad cases which are attended by extensive ulceration and infiltration, and are allied with advanced pulmonary tuberculosis. Therefore, we should, in my judgment, do little more, or differently, from what we should do were there no visible laryngeal complications. Locally and generally, I am thoroughly convinced there is nothing wiser or better than to keep such patients continuously—or as much as is practicable—in an *aseptic* atmosphere. This may be done, I believe, by the use of the perforated zinc inhaler and by the judicious use, in connection therewith, of the best beechwood creasote. There is nothing absolutely specific about the use of this remedy in this way; but it is a help, and a *great help*, especially among the poor and with those who live in cities, or wherever and whenever air is contaminated with pernicious germs, probably. Already, and several times, I have emphasized the importance of this local use of creasote, but I do so again and with no uncertain voice, because I believe its importance *is very great*, indeed.

In addition, of course, do absolutely everything that one should do to combat successfully the *general* disease. Nor is my counsel as regards the

use of the zinc inhaler to be restricted by any form or stage of laryngeal phthisis. In all stages and in all forms, it is useful in diminishing or allaying *cough*, and this is a great boon frequently, where there are tiresome, fretful days and sleepless nights.

I have seen several times already, *cough* notably allayed with the use of the inhaler, when no form of anodyne, given by the mouth, or applied locally, would afford anything like the same degree of comfort.

RHEUMATOID ARTHRITIS.

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THE large increase in the prevalence of rheumatoid arthritis in this country and in England makes the disease at the present time one of considerable interest. For the past eight or nine years it has been my lot to see and to treat a considerable number of cases, with the result that I have arrived at conclusions which perhaps may not be altogether in keeping with current opinion.

Some years ago I ventured to express my belief that rheumatoid arthritis was a nervous disease dependent upon the presence in the blood of toxic substances, possibly the result of invasion by the diplococcus of rheumatism. It is true that the statement was based upon nothing more than clinical evidence, but a more prolonged experience has made me feel that those conclusions were not only in a measure justified, but that, if anything, the statement was too much restricted in its nature, and an undue importance attached to the occurrence of a history of rheumatic infection.

The number of cases in which no history of rheumatic fever could be obtained began to attract my attention. The next thing I observed was that the history and course of those cases in which a definite amount of rheumatism was given differed in many important respects from those in which the history was of a less definite nature. Finally, in considering a typical account of this very much misnamed disorder I noticed that too frequently the *patient* supplied the adjective "rheumatic" in describing the pains which preceded the joint changes which occur in rheumatoid arthritis.

These pains may be present for many years before any changes can be

seen in the condition of the joints. They may be of all degrees of severity, from a barely noticeable inconvenience, to burning, agonizing pains which admit of no rest day or night during their continuance. An interesting point in connection with these pains is that their severity is by no means always associated with a rapid development of the disease in its articular manifestations, and that they are of an essentially different character to the pains which are experienced as a result of the arthritis. They are of a nature which distinctly suggests the pains of multiple neuritis, or in their more severe forms the lightning pains of locomotor ataxy. Nor does the resemblance to locomotor ataxy cease at the description of the pain. The joint changes in the two diseases are hardly distinguishable from one another, while recently the Roentgen rays have shown that the early changes which occur in the bones bear very remarkable resemblances.

I think it may be advanced without fear of contradiction that the changes in the bones exhibited by skiagrams afford direct support to the idea that the lesion is dependent upon faulty innervation. In the first place, the importance of the resemblances in the changes which occur in rheumatoid arthritis and locomotor ataxy is too great to be lightly set aside. In the next place, the ends of a broken bone, in which, of course, nutrition is abnormal for the time being, exhibit similar characteristics. The bones of a limb which is kept at rest show like changes. There is a suspension of the normal physiological influences.

In gonorrhœal rheumatism a similar condition may also be seen. The appearances presented are due to rarefaction of the bone, from an absorption of the bone salts. The rays consequently pass through the affected bones much more readily than through the normal bones.

The interest attaching to the changes observed in the case of gonorrhœal rheumatism lies in the fact that they are local and dependent upon a local toxic state interfering with the nutrition of that particular region of the body. In rheumatoid arthritis, though pain may be complained of in every other portion of the body, the bones of the hands exhibit most markedly the characteristic lesions, affording strong evidence of the existence of some general cause being in operation.

Closely following upon and associated with the pain is another evidence of nervous affection: loss of strength. This, again, may make itself evident long before any joint changes are visible in the course of an ordinary examination. I have read somewhere of a continental practitioner who professed his ability to diagnose cases of rheumatoid arthritis simply by the character of the grasp when shaking hands with a patient. It seems to be carrying matters

to rather a fine point, but there is undoubtedly a noticeable lack of vigor which may justify suspicion as to the cause.

The next most important point is the occurrence of wasting in the muscles. This is more readily seen in the muscles of the thenar and hypothenar eminences than elsewhere. I do not suggest that wasting does actually first occur in such situations, only that the changes are more readily noticed in those groups of muscles than in the interossei. With or preceding this loss of substance the patient notices also a loss of strength, which seems to be more liable to affect the pronators than the supinators. I think it is noticed because pronation is more frequently performed than supination.

Lastly, the joint changes engage one's attention. These, though they may be the actual cause of the patient seeking advice, may often be proved to be the last in the sequence of events. With careful questioning the fact may be elicited that, in the majority of cases, the disease has developed as above described. Where this is not so it is my present belief that such cases are not primarily rheumatoid arthritis. This does not, however, preclude the possibility of rheumatoid arthritis having become grafted on to some other joint affection.

With regard to what I believe to be the exciting cause of this nervous disease, it is possible that the toxins are not the product of the activity of the rheumatic bacillus alone, but of other conditions and possibly of other bacteria.

I have already been struck by the frequency with which worry, overwork, and nervous irritability have been advanced as, in the patient's opinion, influencing and even producing the disease. So often has this been the case that I have ceased to regard it as a mere matter of coincidence, but, on the contrary, attach some importance to the point. Nor does this in the slightest degree militate against the idea that toxic poisoning of peripheral nerves may be the explanation of the disease.

Prolonged anxiety alone will lower the vitality of the body. It is a fact of common knowledge that a nursing mother flying into a bad temper may cause sickness in her offspring through the alteration caused in the constitution of her milk. She may be and is the actual elaborator of the harmful toxins. In like manner the toxins whose effects we are at the present moment considering may be the actual products of tissue changes perverted by anxiety, overwork, or bad and excitable temper, quite as much as bacterial invasion facilitated by a condition of lowered vitality consequent upon such mental states.

Again, I have recently had under observation two cases in which the history of the disease clearly dated from the use in one case of a diphtheria antitoxin and in the other from a severe attack of influenza. The occurrence of and liability to sore throat are very frequent, so much so as to make its

intimate association with the incidence of rheumatoid arthritis a matter of great difficulty from sheer want of definiteness.

In both the cases I refer to the departure from a state of perfect health to illness followed by rheumatoid arthritis was so well defined that I have no hesitation whatever in affirming my belief that the connection was direct and intimate.

The question as to the varieties of rheumatoid arthritis is one which has interested me. It is, or at all events has been, the habit to class the disease amongst the chronic disorders; but I cannot help thinking that, though it may sound like a contradiction in terms, rheumatoid arthritis may be not only chronic, but acute and subacute. There is a further variety having many points in common with exophthalmic goiter. Fortunately it is not frequently seen, as it is peculiarly intractable and the joints are usually very painful.

The diagnosis of rheumatoid arthritis is sometimes a matter of considerable difficulty, but the use of the Roentgen rays will often facilitate matters. Apart from them, the points in the history to which I have referred and the greater liability of the disease to occur in women will help to distinguish it from any other joint affection with which it is likely to be confounded, with the possible exception of osteo-arthritis. The skiagrams of this latter show a condensation of the bony tissue.

There are some very late cases not only of other joint diseases, but of rheumatoid arthritis itself, in which a positive diagnosis is impossible. In such cases, generally speaking, a correct diagnosis is a matter of indifference so far as any benefit is likely to be conferred by a solution of the problem.

The treatment of rheumatoid arthritis consists of balneological methods, medicinal treatment, and dietetic treatment.

No routine treatment can be recommended; the varying conditions which may make treatment necessary require a modification in the procedures to be adopted.

I do not approve of radiant heat baths, though mild, full Turkish baths, followed by douching and gentle massage, often seem of service. Fango mud packs may also be employed, provided they are not applied at too high a temperature.

Medicinally, I think the iodides rank as of the first importance. In combination with small doses of arsenic they are of decided value. A great deal can be accomplished, not only in the direction of relieving pain, but when actual fixation of joints has occurred, and even after many years' duration, by the cautious use of thiosinamine and formic acid.

The appearances presented in the skiagrams of early cases suggest the

advisability of attempting to replace the absorbed salts. It appears to me that if this could be done a reasonable chance of cure exists. I have been fortunate enough to demonstrate the possibility of its accomplishment, but my experience of the line of treatment I followed is not sufficient to entitle me to make more than a bare reference to the fact.

Dietetic treatment is of the utmost value and importance. Good food and plenty of it must be the guiding principle. I have never found any good result in recommending abstinence from meat. I do not think alcoholic liquors of the least use except as an aid to digestion, when the smallest amount of good Burgundy or dry champagne may possibly be of service.

Cyclopædia of Current Literature

ACID INTOXICATION THEORY.

The writer reviews the history of the acid intoxication theory, which he does not think will suffer materially from the more recent findings. He especially notices the work of Knoop as furnishing a working hypothesis, defining not only the material out of which the acetone bodies can be formed in diabetes, but also the chemical reactions involved in their formation. His fatty acid intoxication theory admirably accounts for the facts and it gives a tangible conception of the intermediary catabolism involved in the oxidation of foods in the animal organism. By linking the fatty acids to the stable benzene group, Knoop was able to arrest their otherwise too rapid oxidation at enough intermediate points to form a fairly definite conception of the successive steps in their destruction. Summarizing the results as regards normal fatty acids, it may be said that all these which contain an even number and not less than four carbon atoms can be oxidized to oxybutyric acid. Normal fatty acids which contain an off number of carbon atoms can not yield oxybutyric acid. The formation of oxybutyric and diacetic acids in these may be said to be due to the fact that the diabetic organism is not able quite to finish the attack on the beta-carbon atom of butyric acid. Whether this is a matter of faulty oxidation or of inadequate hydrolysis, the writer considers uncertain. The amino acids which go to make up the proteids may be parting with their amino groups, become fatty acids, and thus also the precursors of the acetone bodies. The question whether fat or protein is the chief source of the acetone bodies is, theoretically, at least, settled.

There are still things uncertain and calling for further investigation in these recent researches, and some important questions calling for discussion, but the author passes to the question of the alkaline therapy of acidosis, which must, after all, furnish the final proof of the acid intoxication theory. He criticizes the dependence on sodic carbonate alone as not in accordance with current physiologic teaching, and this may serve to explain its shortcomings. The superiority of salt mixtures as against any one

salt, in maintaining living tissues intact, has been abundantly demonstrated, and flooding of a diabetic patient with sodium, considering the toxicity of some of its compounds, may be injurious or less helpful than the use of an equivalent mixture of sodium, calcium, potassium, and magnesium. Since the blood of these patients shows a diminished capacity for carrying carbon dioxide, he thinks the useless and burdensome carbonic acid of the carbonates should be replaced by organic acids having some fuel value. Like other foods, they ought to reach every part of the tissues, as the precursors of oxybutyric acid are supposed to do, and through their oxidation the oxybutyric formation should tend to decrease, and whatever did form, be neutralized in the very cells where it originates, a result confessedly lacking in the sodium carbonate treatment. Otto Folin (Journal of the American Medical Association, July 13, 1907).

ACIDOSIS.

The treatment of acidosis in diabetes is too often symptomatic. Etiological treatment is generally forgotten. As repeatedly emphasized by Naunyn, acidosis varies inversely with the capacity of the individual to utilize carbohydrates. A gain in the power of oxidizing a few grammes of sugar avails far more than alkalies in overcoming acid oxidation. It is because the treatment of diabetes has been directed of late years toward improving this tolerance that the treatment of acidosis has also improved. Aside from general measures leading to this end, search has been directed for some form of carbohydrate which would be capable of oxidation in the diabetic body, and thus would promote the secondary oxidation of betaoxybutyric acid. For this reason lactose and levulose were tried, and recently Poulssen has suggested the employment of the alga. The most hopeful outlook, however, is presented by Baumgarten's discovery that the radicals into which the carbohydrate molecule is first split are capable of oxidation in the body. It is not unlikely that one of these radicals—gluconic, sucric, mucic, glycuronic, and other acids—may eventually be available for the secondary oxidation of betaoxybutyric acid. Schwarz obtained favorable results with gluconic acid some years ago, but its expense so far has prevented its general use. Empirically, such a body has been sought by von Noorden in oatmeal. The work of Eppinger and Langstein suggests that the use of amino acids may be better symptomatically than the employment of the simple alkalies. Eppinger prevented the appearance of coma in rabbits after the injection of acids, by the simultaneous injection of the amino acids, and its protection apparently was not wholly due to the ammonia therein contained. On the other hand, the work of Embden, Baer, and Blum warns us to proceed slowly with the employment of the lower fatty acids. The researches of Satta and Borchardt upon the acid-forming and acid-destroying components of fat and albumin must be further developed. E. P. Joslin (Boston Medical and Surgical Journal, July 11, 1907).

ADENOIDS AND ADENOID TUBERCULOSIS.

Primary tuberculosis occurs in a certain proportion of all cases of adenoids. From the figures of other observers, and the writer's own, this seems to be about 5 per cent. This is regarded as a conservative estimate. In determining

the presence of adenoid tuberculosis the histological method is the most satisfactory. Tuberculosis does not appear to be an important factor in the production of adenoid hypertrophy. Adenoids and tonsils are the important channels of infection in tuberculosis of the cervical glands. In the development of pulmonary tuberculosis adenoids may sometimes be direct channels of infection, but their importance is probably more often indirect by predisposing to catarrhal inflammations of the upper respiratory tract. E. H. White (American Journal Medical Sciences, August, 1907).

ADRENALIN IN NEURALGIA, NEURITIS, AND REFLEX OR REFERRED PAIN.

Adrenalin has been used by the writer externally to combat the pain accompanying functional neuralgias and neuritis. The only absolute failures noted were in cases of neuralgia springing from toxic conditions. Reflex neuralgias of great severity were relieved for periods varying from a few hours to several months, and the pains of gout, articular and muscular rheumatism, and myalgia are relieved almost entirely for a considerable time after the application of the adrenalin. In nearly 100 cases one application of an adrenalin ointment relieved the patient of pain in cases of recurrent facial neuralgia for periods of from one month to six months. The writer says that the quantity of a 1 to 1000 ointment of adrenalin to be used in any affection of a peripheral nerve should not exceed from one to two minims, by inunction, except in case of the sciatic nerve, when two or three minims may be used. Larger quantities often produce ischæmia, which might prove injurious. The application of the ointment must be made directly over the affected nerve. H. G. Carleton (Therapeutic Gazette, May, 1907).

ALIMENTARY HYPERSECRETION.

When the stomach glands react to the normal stimulus of food in the stomach with an excessive secretion of gastric juice, numerous symptoms of nervous dyspepsia are observed, with possibly headache, sleeplessness, irritability, etc., oppression and pain in the stomach, variable appetite, and occasionally vomiting, nausea, and acid eructations. The typical condition was encountered by the writer in 30 cases during the last three years. Men seem to be more frequently affected than women.

The treatment is that of nervous dyspepsia in general, avoiding everything that stimulates production of gastric juice, such as soups, alcohol, black coffee, and tea. Belladonna seems to be most efficient in reducing the excessive secretion. He gives it in a suppository or in powders—sodium citrate and magnesia, each 15 gm. (225 grains) and extract of belladonna, 0.3 gm. (5 grains). Boas advises alkalies. Lavage of the stomach is not required unless the motor functions are much depressed, but massage may prove useful by facilitating expulsion of the abnormally large amount of gastric juice. Boas's dry test-breakfast is an aid in differentiating the condition. W. Zweig (Archiv f. Verdauungs-Kranheiten, Bd. xiii, Nu. 2; Journal of the American Medical Association, July 6, 1907).

ASTHMA.

The writer is of the opinion that asthma is caused by a reflex irritation of the pneumogastric nerve, which causes the muscular fibers of the bronchioles to contract. The cause of this irrita-

tion is swelling of the nasal mucous membrane and pressure on asthmatogenous areas. The circular muscular fibers of the small bronchial tubes are well developed and are controlled by the pneumogastric nerve. That vasomotor disturbance is not the cause of asthma is shown by the fact that spasm of the blood-vessels and turgescence of the bronchial mucosa do not cause asthma. Asthma is due to pressure on asthmogenous areas in the small fossæ. These areas may be on the nasal septum, or rarely it may be due to closed empyema of the ethmoidal cells. Relieving pressure on these areas relieves the asthmatic symptoms. The usual exciting causes in the form of dust, etc., act by causing congestion of the mucosa; so does dampness, while cold, dry air relieves it. Iodine relieves it by lessening congestion, and vasodilators by equalizing the whole vascular system. Adrenalin has the same effect. Atropine diminishes the irritability of the pneumogastric nerve. Burning of niter paper reduces local vasoconstriction. Peptic disturbances and uric acid engorge the asthmatogenous areas. So all the facts tend to prove the author's theory. E. L. Smith (Medical Record, June 29, 1907).

BERIBERI, RICE AND.

Uncured rice is believed by the writer to be either directly or indirectly a cause of beriberi, the actual cause being a poison contained in the rice, deficiency of proteid matter, or uncured rice does not form a sufficiently nutritive diet and renders the patient's system specially liable to invasion by a specific organism, which is the cause of beriberi. Among 120 patients fed on uncured rice there were 43 cases of beriberi and 18 deaths. Among 123 patients fed on cured rice there were 2 cases of beriberi, and these both had the disease on admission. Ten patients suffering from beriberi who were placed on a diet of cured rice all recovered. Of 26 patients suffering from beriberi who were not put on a cured rice diet, 18 died. Four patients who had been on a diet of cured rice for more than five months, and were apparently healthy, were transferred to a diet of uncured rice. Two of these patients developed beriberi within three months. W. Fletcher (Lancet, June 29, 1907).

CANCER OF THE BREAST, RESULTS OF OPERATIONS FOR.

Out of 516 cases of primary operation for cancer of the breast at the Massachusetts General Hospital from 1894-1903 inclusive, 376 were traced to a conclusive end-result at an average period of eight years after operation. Sixty-four cases were alive and well, and 7 died without recurrence over three years after the operation. Counting in the operative mortality, there were 320 attempts at radical cure, 67 of which, or 20.9 per cent., were successful. During this same period palliative operations were performed on 56 patients (15 per cent). and 52 cases were discharged untreated.

Cases in which the tumor was ulcerated, or was adherent to the skin or to the chest wall, and cases in which the axillary glands were palpably enlarged, gave notably less promising results than when these conditions did not exist. No case with palpably enlarged cancerous glands above the clavicle, and no case of cancer of both breasts was cured. Medullary carcinoma was more grave than that of the scirrhus type, and adeno-carcinoma and colloid were relatively of a far less malignant type.

The duration of the disease and the

age of the patient, other than in the individual case, exerted little influence on prognosis. Extensive operations with wide removal of skin gave the greatest freedom from local recurrence. Removal of the pectoralis minor appeared to be of slight significance. Incomplete operations on early cases yielded better results than extensive operations on cases which were well advanced. Recurrence in the scar occurred in less than one-half of the cases. Internal metastasis was most frequent in the lungs, mediastinum, in the axillary and supraclavicular glands, the liver, and the spine. Seventeen out of 88 cases, or 19 per cent. of those passing the 3-year limit without evidence of recurrence, showed recurrence later, and 4 cases developed recurrence 6 years or more after the operation. R. B. Greenough, C. C. Simmons, J. D. Barney (Surgery, Gynecology, and Obstetrics, July, 1907).

CLEFT PALATE.

An operation for the closure of a cleft palate should be done only when there is a fair likelihood of success. It should be done only by those possessing special skill in naso-pharyngeal and oral surgery. When it is probable that several operations may be necessary, the parents or patient should be so informed. The operation should be done as early as possible, and in the difficult adolescent cases the operation after a preliminary tracheotomy may be preferable.

There are two reasons for attempting to close a cleft palate, namely, to improve the general health of the patient and to increase the efficiency of the faculty of speech. The general health is benefited in two ways, namely, by improving the hygiene of the naso-pharynx and oral cavity and by improving the general morale of the patient. The speech is improved by a course of psycho-physical training, in which the patient is taught first to recognize normal speech and then to make the best use of his still imperfect organs in its production. G. Hudson-Makuen (New York Medical Journal, July 27, 1907).

COLITIS, MUCOUS, SIGNS AND SYMPTOMS OF.

Mucous colitis in its varied forms, and cases whose symptoms are directly traceable to absorption of toxic products from the large intestine, are commonly met with. Abdominal symptoms are not always by any means marked, and it is a mistake to imagine that a patient suffering from the disease must pass mucus in very obvious quantity. Errors of diagnosis may readily occur if cases are looked at in the light of their secondary symptoms only. The thorough examination of the colon should be made as much of a routine as is that of the stomach, heart, or other important organ.

The use of balneotherapeutical measures for the treatment of this disease is attended with excellent results, often after the usual methods have met with little or no success. Special baths for the treatment of mucous colitis are now greatly in favor. The baths consist of two parts, which may be given together or separately as the medical attendant may direct. (*a*) The intestinal douche is administered while the patient lies on a special couch. A rubber tube, the length varying from fourteen to seventeen inches, according to prescription, is passed into the bowel by an experienced attendant, and the prescribed amount of hot mineral water allowed gently to flow from a jacketed cylinder, the pressure being graduated according

to directions. The patient's position is altered during the time the douche is retained, the bowel emptied, and the process repeated. (*b*) The Tivoli douche. This consists of an ordinary reclining bath, in which the patient lies covered, except for the head and neck, with warm mineral water. While lying in this way a hot wave douche is played on the abdomen from a special apparatus, and is usually prescribed at a much higher temperature than that of the bath. These methods are carried out in conjunction with special dieting, massage, and the drinking of mineral waters. H. D. Wilson (Edinburgh Medical Journal, July, 1907).

DIPHTHERIA, LATENT.

The prevalence of diphtheria is due to the lack of control over latent cases of this disease and over the so-called "carrier" cases. Diphtheria may occur in a latent form without pseudomembrane and with only slight symptoms. Latent cases should be isolated until two successive negative cultures have been obtained. All cases of sore throat should be reported to the health authorities and should be examined bacteriologically. Infected "contacts" should be excluded from school or work and should not be permitted to frequent public places until two successive cultures have proved negative. All who have been in contact with a diphtheria patient, whether at home, at school, or at work, should be examined bacteriologically. Disinfection of formites and terminal disinfection of rooms and their contents are insufficient and reliance thereon treacherous. Animate carriers of infection are more dangerous than the inanimate. M. Solis-Cohen (Journal of the American Medical Association, July 6, 1907).

FEVER, HEAT-FORMATION IN.

The writer reviews the various theories that have been suggested in regard to the source of the surplus heat occurring in fever and the manner in which it is liberated, and details the results of experiments he has carried out since he and Sachs, twenty-two years ago, discovered the heat-center in the corpus striatum. He does not agree with those who believe that the liver, brain, blood, and pancreas are sources of the excessive heat, but is of the opinion that the muscles are the site of its liberation. The theory that the muscles, through increased contraction of their fibrils, generate the heat of fever is also discredited, and the author describes experiments which bear out his contention that the abnormal heat-formation in fever is the result of the action of proteolytic ferments on the cells of the muscle bundles. His theory of heat generation in fever is as follows: Impulses originating in the heat-center are transferred through caloric or trophic nerves to the muscles; the muscle-plasma sets free proteolytic ferments in abnormal amounts, and these transform the vital force of the cell-contents into heat. Aronsohn (Berliner klinische Wochenschrift, June 17, 1907; Medical Record, July 13, 1907).

HÆMORRHOIDS, TREATMENT OF.

When hæmorrhoids are present in abundance and covered by irritating mucous discharge, the writer applies a lotion of bichloride of mercury, 1 to 1000, twice a day. He says it is surprising what improvement will take place, even in very bad cases, under this treatment. If this treatment fails, and there is only a single hæmorrhoid, the writer advises its submucous incision, replacing the mucous membrane over the denuded

area. When there are many hæmorrhoids or when there is not enough mucous membrane to cover all the stumps, and there is some risk of contraction of the anus, the Whitehead operation should be done. A. E. J. Barker (Lancet, June 22, 1907).

HEADACHE AND NEURASTHENIA OF NASAL ORIGIN.

The writer has frequently found that patients suffering from recurring headache or from neurasthenia are relieved of the trouble by removal of some obstruction in the nose or sinuses or by the treatment of a sinusitis. In one of his cases trigeminal neuralgia had persisted for weeks, the pain being so intense that sleep had been impossible. The most diverse treatment had given no relief. All pain vanished immediately after the maxillary sinus was evacuated, removing cheesy matter with which it had been filled. In other cases supraorbital neuralgia, which recurred every day at a certain hour, was the result of inflammation in the frontal sinus and was cured by appropriate treatment. He has witnessed the prompt vanishing of the severest frontal neuralgia after application of the Politzer method. The pain may be due to the inflammation itself or to compression from secretions, or merely to rarefaction of the air in the sinus. Even the severe frontal headache of influenza can be immeasurably improved by a single application of the Politzer method of inflation. The pains subside entirely or temporarily. Repeating the application the next day soon completes the cure. The effect is similar to that derived from the air douche in middle ear affections. In another case described, chronic neuralgia had persisted for over a year, with intense pains in the right side of the head. The use of the air douche soon banished the pain entirely. The trouble was not due to an inflammatory process in this and similar cases, but merely to occlusion of the sinus, shutting off communication with the air. The writer's experience has demonstrated that this is a comparatively frequent occurrence and is liable to cause distressing pain. Opening a communication into the nose banishes the pain at once. Some of his patients return to him often for relief, as every "cold" causes the communication into the sinus to become stopped up. The passage of a thick sound through the nose into the sinus frees the patient at once from all pain. He has found in other cases that headache may be caused by morbid conditions in the muscles at the back of the neck, which can be corrected by faradization. Removal of adenoid vegetations, deviations and thickening of the nasal septum, swelling of the nasal mucosa, or correction of other anomalies in the nose, should always be tried in cases of persisting headache and neurasthenic symptoms. The obstruction in the nose may be the sole or the principal factor in the trouble. A. Hartmann (Deutsche medizinische Wochenschrift, Bd. xxxiii, Nu. 18; Journal of the American Medical Association, July 6, 1907).

INFANTILE DIARRHŒA, TREATMENT OF.

In infantile diarrhœa careful feeding is advised by the writer, and intestinal irrigations with boiled water, 0.02 per cent. boric acid or naphthol solution, or normal saline solution. The irrigations facilitate the elimination of toxic substances from the intestine and supply the loss of the body fluids caused by the diarrhœa. During irrigation the child should be upon its right side; a soft rubber catheter should be used, and the

receptacle of the fountain syringe, through which the lavage is given, should be elevated not more than five or six inches above the patient. The quantity employed should be from one pint to one quart and the fluid should be cold if the patient's temperature is elevated, hot if the latter is subnormal. As an intestinal antiseptic, three powders, consisting each of 5 grains of bismuth salicylate and $2^1/_2$ grains of benzonaphthol, may be given daily. Lactic acid should not be prescribed if the patient is taking milk. If the child is less than one year old he may take a teaspoonful of the following mixture every half hour: lactic acid, 3 parts; quince syrup, 25 parts; distilled water, 100 parts. If older than one year, dessertspoonful doses may be given. Bismuth in a mixture containing soluble bismuth phosphate, 2 parts; simple syrup, 10 parts; distilled water, 90 parts, may act well; the dose is one teaspoonful every hour. If vomiting is present, gastric lavage may be indicated. Injections of artificial serum are often very useful. Perret (La quinzaine thérap., Vol. vi., P. 450, 1907; American Journal Medical Sciences, August, 1907).

INFLAMMATION, ACTION OF HOT AND COLD WATER BANDAGES IN.

The writer refers to the fact that the osmotic pressure of the fluid in which they are laved has a great influence on the size of the cells. When the osmotic pressure is high the cells of the region swell and pain results; the cells are injured and inflammation follows. The application of hot or cold water bandages to induce "reactive hyperæmia," among other things affects the condition of the osmotic pressure, increasing the centrifugal movement of the lymph and with it sweeping the products of inflammation toward the periphery, where they are liable to be taken up by the blood or otherwise rendered innocuous. Superficial œdema with deep-seated inflammation should be regarded as an indication for inducing this reactive hyperæmia, and this indication can be met by applying a Priessnitz bandage. It is also indicated when the œdema is still latent, as the effect is far-reaching. H. Schade (Münchener medizinische Wochenschrift, Bd. liv, Nu. 18; Journal of the American Medical Association, July 20, 1907).

LARYNGEAL TUBERCULOSIS.

Three cases of advanced laryngeal tuberculosis are reported by the writer in which the patients were cured by energetic local and general measures, and have been in good health for from eight to eleven years, one of the patients being a clergyman. The voice is now normal in all, and coëxisting tuberculous lesions in the lungs healed with the laryngeal process. The author curettes or cauterizes and then applies lactic acid, full strength, repeating the procedures again and again. He gives illustrations of the findings in the larynx before and after treatment. One patient was a woman who has since passed through two pregnancies without recurrence, although a circumscribed redness was apparent during pregnancy at the site of the former lesions. Great patience and perseverance are required, and local measures are indispensable. In advising a patient to go to a sanatorium one should be selected where local treatment of the laryngeal lesions can be continued, otherwise the patient is liable to return from the sanatorium with the laryngeal process aggravated, and this in turn is unfavorable for the prognosis of the pulmonary affection. Even

palliative surgical measures are often a great relief. H. Burger (Zeitschrift für klinische Medizin, Bd. xlii; Journal of the American Medical Association, July 27, 1907).

LEUCOCYTOSIS AFTER THE USE OF DIGITOXINE.

The effect of the new preparation of amorphous digitoxine (digalen) was studied by the author, with reference to the increase in leucocytes in the blood of patients to whom the remedy was administered hypodermical'y. He also compared the results with the effect of the internal use of the ordinary infusion of digitalis leaves. From a study of twelve cases he concludes that there is a marked leucocytosis after the use of digalen. It should be noted that the vehicle in which the digitoxine is dissolved in this preparation is a 25-per-cent. solution of glycerine and water. It may be that this solution in itself may produce leucocytosis when injected hypodermically. To make sure, a 25-per-cent. solution of glycerine was injected into the same patients, without, however, producing any leucocytosis. The increase in leucocytes regularly occurred from seven to eight hours after the injection of digalen, and the number reached within twenty-four hours double the original number of leucocytes counted. This occurs both in patients with heart disease and with pneumonia. The leucocytosis recurs every time a dose of digalen is administered. Other authors found leucocytosis after injecting an infusion of digitalis into animals. Very probably the action of digalen upon the blood is due to the direct effect of digitoxine, which seems to attract the leucocytes or else to stimulate the production of leucocytes in the bone-marrow. Inasmuch as the remedy in question regulates the heart and increases the functional efficiency of the kidneys, its property of producing leucocytosis is a valuable addition to its qualities as a remedy in pneumonia. D. Cappuccio (Riforma Medica, June 8, 1907; New York Medical Journal, July 27, 1907).

LICHEN PLANUS, THE SALICYLATES IN THE TREATMENT OF.

Perhaps the most generally useful internal remedy in the treatment of lichen planus is arsenic, which, when associated with appropriate local applications, in most cases produces improvement within a reasonable time, and eventually a cure. In a not inconsiderable minority, however, arsenic fails to exert a favorable influence on the disease, or may even aggravate it and materially increase the patient's discomfort. In these cases the writer has recently employed with more or less success the various salicylates. M. B. Hartzell (Journal of the American Medical Association, July 20, 1907).

MYOPIA WITH CORNEAL OPACITIES.

Central corneal opacities are a much more frequent cause of myopia than would be inferred from an examination of general ophthalmic literature. According to recent reliable continental statistics, in at least one-third of the cases in which they are present central corneal opacities produce myopia, although this average is likely higher than that found in American ophthalmic practice.

The myopia is axial and not dependent on alteration of the corneal nerve. Ophthalmometric examinations do not show any significant differences between the corneal curvature of myopic eyes with corneal opacities and similar eyes in which the refraction is emmetropic

or hyperopic. The mechanism of the production of the myopia is analogous to that of the common form following astigmatism, anisometropia, etc., with the added predisposing factor of weakened ocular tunics by previous inflammation.

The association of disturbance of the chorioid and retina of the posterior segment of the eyeball with inflammations of the anterior membrane is an important element in further reducing visual acuity in these cases. For a similar reason extensive fundus lesions are common, and the myopia is more likely to become progressive than ordinary.

Either unilateral or bilateral opacities may produce myopia, and the myopia produced may be unilateral or bilateral. In the cases of unilateral opacity the myopia may be single or double. If in such cases the myopia is unilateral, it may appear either on the sound or the affected side, but no definite rule can be established in this connection. However, it is likely that when one eye is used almost exclusively for close vision it will become myopic first or to a greater extent than its fellow. In cases of bilateral corneal opacities the myopia is generally bilateral. When there is a marked difference in the amount of defect in the two eyes, the greatest myopia is often found in the eye with the least corrected visual acuity. When the myopia is unilateral, it often occurs in the eye with the least opacity. The cases of unilateral myopia are strongly suggestive of the importance of ciliary strain rather than excessive convergence in myopogenesis.

In view of the strong possibility of resultant myopia, all cases of corneal disease, particularly the phlyctenular affections of childhood, should receive prompt and continuous treatment, and prophylactic measures should be rigidly followed to prevent recurrences. After the subsidence of the inflammation energetic treatment should be adopted to clear up the opacities.

Of greatest importance in the prevention of the subsequent myopia is careful and repeated refraction of both eyes under artificial cycloplegia, employing both objective and subjective methods, and the constant use of correcting lenses. All errors in ocular, personal, and domestic hygiene that encourage the development of myopia should be corrected, and the patient should be kept in the best physical condition and most salutary environment. W. L. Pyle (Journal of the American Medical Association, July 20, 1907).

OTITIS MEDIA, SUPPURATIVE: TREATMENT.

Broadly speaking, practically every case of suppurative otitis media is assumed to be susceptible of cure by one means or another. Every case of chronic suppurative otitis media, without symptoms of intracranial invasion, should be treated patiently and persistently for a reasonable length of time, but not indefinitely, by well-directed efforts at cleanliness and antisepsis through the external auditory canal. When it becomes evident that these simple measures or minor operations cannot cure the disease, tympanomastoid exenteration should be advised unless in a given case there exists some special reason of socio-economical character that justifies delay and the risks of the disease.

The clinical evidences of an inveterate purulency that may help one to decide the question of when to recommend operation are: the finding of cholesteatomatous masses, epithelial cells, or bone-dust in the washings from the middle

ear; the tracing of the source of pus to the mastoid antrum or labyrinthine capsule; or the existence of granulomas springing from carious areas of the tympanic wall which cannot be directly inspected and treated.

The possible dangers of the operation are believed to be far less than those of the disease. The patient should be told that not every case is curable, even by an operation (the percentage of cures in the obstinately chronic cases probably approximating 70 per cent.), that the hearing power will probably not be improved and may be somewhat impaired, but that the serious nature of his disease warrants surgical intervention as a prophylactic measure.

Every patient upon whom an operation of tympanomastoid exenteration is contemplated should be most carefully studied for a considerable period of time, in order that the slightest evidence of latent meningitis or purulent labyrinthitis may be detected, and when there exists any reason to suppose that the disease has extended beyond the bounds of the tympanic cavity the patient or his guardians should be told that an element of danger attends the operation. The possibility of postoperative complications cannot be ignored, and the surgeon must safeguard himself. H. O. Reik (American Journal Medical Sciences, August, 1907).

PENTOSURIA AND DIABETES.

Stress is laid by the author upon the importance attaching to the recognition of pentosuria, and he supplies a simple method of differentiating it from diabetes mellitus. The diagnosis of the latter disease in practice rests essentially on the examination of the urine and the results given by Fehling's or Nylander's test. In cases of uncertainty recourse is had to the phenylhydrazin test, and if the typical yellow crystals are obtained, then no doubt usually remains in the mind of the physician that glucose is present. Unfortunately, however, research has shown that these tests are unreliable; even the phenylhydrazin test may be given by urine that contains no grape-sugar whatever. For all of them give a positive reaction in the presence of pentoses. Grape-sugar is a hexose containing six carbon atoms in the molecule, while the pentoses, containing only five carbon atoms, closely resemble grape-sugar in structure and properties. Clinically, the difference is of extreme importance.

Chronic pentosuria is a not uncommon condition, which is not affected by dieting. But it is in no way dangerous or even serious. It presents absolutely no other symptoms, and as a rule its existence is only discovered when the urine is examined for some other condition. Such examinations suggest diabetes, and, unless it is established that a case of pentosuria is being dealt with, a wrong diagnosis of diabetes mellitus may easily be made, with the most serious consequences to the patient in anxiety, expensive treatment, difficulties in life insurance, etc.

A diabetic urine can be distinguished from pentosuria by the polarimeter, or, again, by the fermentation test, for the pentoses are not split up by yeast. But these tests are not very readily, and certainly not usually, carried out in general practice. There is, however, an easy and, so far as is yet known, quite reliable method of detecting the presence of pentoses in the urine. This is a modification by the writer of the orcin reaction introduced some years ago by Salkowski. The original method involved a somewhat lengthy procedure

quite unsuited to practice, but the use of Bial's reagent is simplicity itself; 4 cubic centimeters of the fluid is heated to boiling point in a test-tube, then withdrawn from the flame, and a few drops of the urine to be examined are added. If pentoses are present in quantity sufficient to reduce Fehling's solution, a beautiful green color develops in the fluid within a few seconds, and this reaction is absolutely characteristic. Further, the diagnosis of pentosuria by this means excludes diabetes mellitus, since the two conditions have not been found together.

The writer quotes a number of authors who vouch for the reliability of the test. The reagent consists of 0.5 gram orcin dissolved in 500 cubic centimeters of 30 per cent. hydrochloric acid, to the solution being added 20 drops of liquor ferri sesquichlorati. It remains active for at least a year. The source of pentoses occurring in quantity in the urine is not yet definitely established. The author believes that they are not derived from the food, and that there is no renal lesion associated with pentosuria. So far as the evidence goes, it would seem that they are derived from the central nervous system, in which they occur normally. M. Bial (Berliner Klinik, April, 1907; British Medical Journal, July 20, 1907).

PRURITUS.

The various forms and causes of itching and their treatment are thoroughly discussed by the writer. He divides the causes into three general categories: (1) external; (2) idiopathic; and (3) constitutional. The external causes are divided by him into two groups: miscellaneous and parasitic, the first including itching from mechanical, toxic, and climatic causes. Under idiopathic causes he recognizes two groups: the neurotic, including reflex and functional, and senile causes. The constitutional are divided also into two groups: the autotoxic, acute and chronic, and the dermato-pathologic causes.

As specially calling for notice may be mentioned his remarks on reflex itching induced by pruritus in other parts of the body and thus complicating itching from other causes, mechanical, parasitic, etc., and the opinion expressed by the author that dermatitis herpetiformis should be classed among the neurotic conditions as being due to some derangement of the cord or the conducting nerves. Senile pruritus stands alone, as a condition probably due to alterations in nerve-structure in common with other degenerations belonging to old age. Urticaria is given as the type of autotoxic forms of itching, and most of the cases falling into the dermato-pathologic group are included in a comparatively few diseases: eczema, erythema multiforme, lichen, dysidrosis, and prurigo. Most of the cases called prurigo occurring in this country, however, are chronic papular urticaria. Careful observation of the cause of pruritus is due in all cases; it is Nature's signal that something is wrong, either with the skin itself or elsewhere, and this must be sought and discovered.

The reasons why pruritus is so often worst at night are given by the writer as the natural nerve-exhaustion and consequent greater irritability at the close of the day, the greater loading of the blood at that time with the products of catabolism, the abeyance of the higher cerebral functions, and external irritation, as from the cold in undressing followed by warmth in bed, etc.

The treatment of itching is a large subject. The constitutional measures, when applicable, are both dietetic and

medicinal. Lowered general and nervous conditions predispose the skin, as well as the other organs, to disease. This is especially true in neurotic cases. Analgesic internal treatment is often of service, but is often greatly misused. Opium and morphine are worse than useless, and aggravate the condition; some of the coal-tar preparations have been recommended and may sometimes be of value, but they should be employed with very great caution. Among other internal remedies mentioned are cannabis indica, which is often of value when used judiciously, and chloral and bromide in combination with a little aconite added, and gelsimum, with which, however, the writer had once unpleasant effects. The hygienic treatment of the skin is important, and the author thinks that the better class of patients are often liable to err in the direction of too much bathing. Woolen underclothing is generally best, and restraint from scratching is very important. Of medicinal local remedies, carbolic acid is preëminent and is a very valuable remedy when rightly employed. L. D. Bulkley (Journal of the American Medical Association, July 27, 1907).

SCARLATINAL NEPHRITIS, PREVENTION OF.

In regard to the use of a prophylactic drug against the nephritis of scarlatina, urotropin is the only one which has proved itself of value. Of 47 consecutive patients treated with this agent by the writer, not one had nephritis and only one exhibited albuminuria. These facts are considered encouraging enough by the author to suggest the further use of the drug in scarlatina. Patients treated with hexamethylenetetramine were less fortunate in escaping nephritis, and the writer holds this drug to be not an exact equivalent of urotropin when considered from the point of therapeutic results. It is suggested that all instances of scarlatina be treated from the beginning with 5-grain doses of urotropin three times a day for children up to twelve years; for patients above this age $7^1/_2$ grains thrice daily are advised. Generous dilution of the drug with water is necessary and the treatment should be continued to the end of the twenty-eighth day of the disease. Thompson (Edinburgh Medical Journal, Vol. xxi, P. 103, 1907; American Journal Medical Sciences, July, 1907).

SKIN, DANGER SIGNALS FROM THE.

The writer remarks on the common error of regarding skin disorders as only local manifestations and treating them only locally. He calls attention to a number of forms of skin disease that are danger signals of conditions more or less seriously involving important organs and the general health. He first mentions syphilis and the danger of slightingly considering it. He says: "Many of us who know syphilis, feel that such brief violent treatment as is often given at various mineral springs is responsible for much ultimate harm, by leading patients to believe that they have a 'cure' and thereafter to neglect all remedial measures until, perhaps, some obscure internal result of the infection has progressed beyond the power of relief." Innocently acquired syphilis is often most serious as regards later harmful effects of the poison, and the danger signal on the skin should be the more strictly heeded. Eczema, usually looked upon as a local affection, may indicate nervous or physical breakdown to which the patient will succumb unless properly attended to. Acne, besides its relation to derangements of

the sexual organs, may be the sign of grave metabolic disturbances or anæmia; a psoriasis eruption may be due to nervous or physical overstrain, or serious urinary disorder. Chronic urticaria is frequently the sign of faulty metabolism and intestinal indigestion and fermentation; erythema multiform and bullous eruptions have a somewhat similar significance.

Severe general or local pruritus may indicate lowered nerve vitality calling for appropriate measures of relief. The first indication of diabetes calling for medical attention has repeatedly been the rather rare eruption, exanthema diabeticorum. Boils and carbuncles are continually being found to indicate a condition of lowered vitality and sometimes of glycosuria. Paget's disease of the breast should always excite serious attention, because of the probability of its being associated with mammary cancer; and acanthosis nigricans, when appearing on the abdomen, has, as Dr. Willy Meyer has shown, a like importance as suggesting cancer of some abdominal organ. Lupus, while usually a local manifestation of tuberculosis of the skin, is a not uncommon associated symptom of the disease in other organs, and a danger signal that should never be neglected in severe and protracted cases.

Other skin affections mentioned as having relations to general disorders by the author are purpura rheumatica and erythema nodosum (rheumatism), petechial and erythematous rashes (malignant endocarditis and occasionally septicæmia and pyæmia), the rose spots of typhoid and skin lesions of epidemic meningitis, the pigmentary alterations in Addison's, Graves's, and Hodgkin's diseases. All these show that the skin is not to be regarded as merely the covering of the body, but that it is a vital organ having the most intimate relations with other parts, and that its ailments are often warnings to which heed may well be given. L. D. Bulkley (Journal of the American Medical Association, May 25, 1907).

SYPHILIS, SULPHUR WATERS IN THE TREATMENT OF.

The question at what period of the disease a patient will derive most benefit from a sulphur cure is no longer discussed nowadays, for it is generally admitted that the cure is indicated at any period, since nutrition suffers and a general stimulation of the system is required from the very beginning of the malady. It must not be forgotten, however, that patients suffering from arteriosclerosis or from liver troubles, or highly nervous people, should not undergo an active sulphur cure. A sulphur cure is indicated whenever a patient stands mercury badly, or when he can tolerate only a very small and insufficient dose, or, finally, whenever, in spite of the mercurial treatment, a therapeutical action is not obtained. The cure is also indicated in the serious forms of syphilis, especially in those forms which are severe at the very outset, also when syphilis supervenes in worn-out and enfeebled patients, and in the obstinate forms which resist treatment.

Certain peculiar cases require a rapid and energetic treatment, with injections of large doses of soluble salts, as they are applied at sulphur spas. These are lesions of the nervous system, due to syphilis; ulcerative lesions which threaten to destroy an organ or even a whole region; in a word, all cases in which a rapid action is necessary in order to prevent destruction or disorganization of tissue and in which time lost

cannot be regained. A sulphur-water treatment has not the pretension of curing syphilis, but it forms the best auxiliary treatment which may be combined with a course of mercury, as it helps very greatly the absorption, action, and elimination of the latter. J. Dardel (Medical Record, July 20, 1907).

TUBERCULIN IMMUNIZATION.

The specific treatment of tuberculosis by tuberculin is based on the principle of artificial immunization. Experimental work has shown that immunity may be produced in animals to a certain degree. The difficulty with artificial immunity in general is that there is little evidence that one attack will protect from another. The part played by antitoxins, antibodies, agglutinins, bacteriolysins, and opsonins is as yet imperfectly understood, but it may be taken for granted that they are all factors in the attempt to protect the body against bacterial infection. If tuberculin is used by the clinical method, it is observed that infinitesimal doses, methodically increased, result in a well-marked degree of toxin immunity, which is shown by increased toleration to larger doses of toxins. The two most important factors in obtaining results are the length of time over which the treatment is extended and the dose of toxin the patient can be made to tolerate. Reparative changes are necessarily produced slowly, and antitoxic or antibacterial immunity is also slowly induced. Not much permanent benefit can be expected from treatment lasting only a few months, especially if a fraction of a milligram is the highest dose reached when the treatment is discontinued. E. L. Trudeau (American Journal of Medical Sciences, June, 1907).

TUBERCULIN IN DIAGNOSIS, DOSAGE OF.

The value of tuberculin as a means of diagnosis is very widely recognized to-day, and in Germany, at least, it is constantly employed for this purpose. But there is considerable difference of opinion as to the best method of regulating the dosage. Thus one group of writers considers that it is unnecessary to raise the dose above 0.2 milligram of old tuberculin, and that, if no reaction has been obtained after four injections of this amount, tuberculosis may be definitely excluded. Another group, on the other hand, believes that not until 10 milligrams have been given at one time without reaction can any reliance be placed on the result. Roepke (Zeitschrift für Tuberkulose, x, 5, 1905) has conducted a series of observations for the purpose of determining which of these methods is the best. An absolute rule can hardly be expected. Every tuberculous patient has what may be called his "tuberculin optimum." When the proper amount has been given, he will react, but not before; and it does not matter whether this amount be given at once or in two or three injections. It is possible, however, to find a limiting dose to which a tuberculous person will react, while a non-tuberculous will not. He finds that the fourfold repetition of 0.2 milligram is quite insufficient to give a reliable indication. On the other hand, there is no advantage in pushing the dose so high as 10 milligrams. Of 445 suspected persons injected with successive doses of 1 milligram, 5 milligrams, and 10 milligrams, negative results were obtained with 6.3 per cent.; while of 273 injected with 1 milligram, 2 milligrams, and 6 milligrams, 6.8 per cent. gave no reaction; that is, the smaller doses gave as reliable an indication as the larger. Fur-

ther, the reaction is as strong with 6 milligrams as with 10 milligrams, and shows itself by local signs as regularly. He considers, however, that the 1-3-6 milligram method is unsatisfactory, in that the doses are too nearly alike. Better results are obtained when the differences between successive doses are made larger, and he recommends three doses in succession of 0.2 milligram, 1 milligram, and 5 milligrams respectively. Kohler (*Ibid.*, x, 4, 1907) finds that administration by the mouth, which has been recommended by Freymuth and others, is too irregular in its results to be of any diagnostic value, and that as a therapeutic method it has no claims to be considered. Ludke (Beiträge zur Klinik der Tuberkulose, vii, 1, 1907) claims to have demonstrated antituberculin in the serum of 11 out of 19 tuberculous patients. Of these 11, 9 had been treated therapeutically with old tuberculin, while two had received no specific treatment. (British Medical Journal, May 11, 1907).

TYPHOID ULCERS, PERFORATING.

Perforation of the bowel in typhoid fever is a much more common condition than is generally supposed, being responsible for about one death in every three cases. The most common time of perforation is between the fourteenth and twenty-first days of the disease and occurs in all grades of severity, from the ambulatory to the hæmorrhagic type, and does not seem to be any more common in the hæmorrhagic than in the milder types of the disease. The ileum is the most frequent site of perforation, in the majority of instances the perforation occurring within 12 to 18 inches of the ileocæcal valve. The next most frequent sites of perforation are the appendix and the cæcum.

Pain of some kind is present in 75 per cent. of all cases. In 50 per cent. of the cases the onset is sudden and severe and of increasing intensity, localizing itself to a special zone. In 20 per cent. of the cases the pain is of slow onset, not localized, with general distribution. In some cases no pain is complained of and the usual symptoms of perforation are absent. Tenderness and rigidity are present to a certain extent in all cases. The latter symptom is regarded by the author as a most valuable sign, and it is rarely wanting except in patients with unusually large and pendulous abdomens.

When perforation is suspected the temperature should be taken every hour, as it is only in this way that definite conclusions can be drawn with regard to any marked variation in this symptom. Distension is a late symptom of perforation, usually not making its appearance until some hours after the perforation has occurred. The obliteration of the liver dullness is not regarded as a reliable sign of perforation. The study of the leucocytes is of little aid, although occasionally their increase may make the diagnosis more positive. The differential count is of no practical value. Before a positive diagnosis is made, pain caused by a pleurisy, pneumonia, cholecystitis, acute gastro-intestinal indigestion, iliac thrombosis, appendicitis, peritonitis, the passage of a renal calculus, distended urinary bladder, or even a hæmorrhagic exudate into the abdominal muscles, must be carefully considered. Any of these conditions may cause symptoms similar to those caused by intestinal perforation.

Nature may occasionally close one or more perforations, but the only rational

procedure where perforation occurs is surgical intervention. No case is too desperate for an attempt, as it has not infrequently been noted that the mild cases succumb and the more desperate ones recover. In cases of doubt, where the symptoms point to perforation, the safest procedure is to operate. As a rule, cases operated on and no perforation found seem rather to be benefited than otherwise by the operation.

When the diagnosis has been made, there is no condition, except possibly that of hæmorrhage, where speed in operating is so important a factor in securing success as it is in intestinal perforation. Everything should be carefully prepared beforehand and all conditions considered, so that when the operation is once begun things should move with rapidity and without any interruption. R. H. Harte (Boston Medical and Surgical Journal, July 18, 1907).

Book Reviews

STORIES OF A COUNTRY DOCTOR. By Willis P. King, M.D., Author of "Perjury for Pay." Revised and Enlarged Edition. Illustrated. The Burton Company, Publishers, Kansas City, Mo. 1907.

After many years of active practice among the pioneers and country people of the west, the author was persuaded by the earnest solicitations of his friends, admirers, and fellowmen, to put in book form his experiences during his active and interesting medical career. With an easy flow of words and a varied vocabulary, the author relates the restlessness of the energetic youth, his desires to get beyond the bonds of restrictions, his entrance into and passage through the virgin forests on his march westward to seek and to build a little world of his own. His privations are necessarily many, but with each obstacle he pushes on with greater determination to gain his goal. What a sterling heart such a man must possess, and what an able citizen he is to a community! By perseverance and self-sacrifice his efforts are finally crowned with success, as far as earthly goods are considered. At this point the author shows the usual contrast between the pioneer and the third generation, and pictures how the success of the former is sometimes dissipated by the worthlessness of the descendant.

The family life of the early settler is portrayed in words of great commendation. The marked confidence of one neighbor in another is shown by the citation of a number of incidents. The doctor and the minister appear to occupy a prominent position in the community, notwithstanding the fact that the trials, tribulations, and hardships of the former are often enough to make him the most disagreeable person living.

The reader cannot help but be impressed with the dignified attitude of the author in courageously upholding against odds all things that are right, especially in such a noble profession as the one he has chosen, where quackery and superstition unfortunately abound. —R. B. S.

Books and Monographs Received

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"Physicians' Manual of the Pharmacopœia and the National Formulary." By C. S. N. Hallberg and J. H. Salisbury. 1907.——"The Antrum of Highmore as an Etiological Factor

in the Production of Hay Fever" (so-called). By Jacob E. Schadle, St. Paul, Minn. 1907. ——"On the Induction of Auto-vaccination in Tuberculosis by the X-Rays." By H. D. McCulloch, London, Eng. 1907.——"Studies upon Hypersusceptibility and Immunity." By M. J. Rosenau and John F. Anderson, Public Health and Marine-Hospital Service, Washington, D. C. 1907.——"The Influence of Antitoxin upon Post-diphtheritic Paralysis." By M. J. Rosenau and John F. Anderson, Public Health and Marine-Hospital Service of the United States, Washington, D. C. 1907.

From the United States Department of Agriculture, Washington, D. C.: "Sanitary Milk Production." 1907.——"The Spring Grain-Aphis or So-called 'Green Bug.'" By F. M. Webster. 1907.——"Sea Island Cotton: Its Culture, Improvement, and Diseases." By W. A. Orton. 1907.——"Brush and Tank Pole Treatments." By C. G. Crawford. 1907.——"Experiment Station Work, XLII.," July, 1907.

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Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

DIPHTHERIA AND ITS SERUM TREATMENT.

BY JOHN WYLLIE, M.D.,
HULL, ENGLAND.

THE question of the value of antidiphtheritic serum in the treatment of diphtheria is one which has divided the medical profession into two diametrically opposite parties. To many medical men this value has assumed a very positive position, while others uphold that it is absolutely inert for good.

It must be borne in mind that as there were poets before Homer wrote, so there were recoveries from diphtheria before our own times, and that in cases of recovery after repeated injections of serum we may perhaps be too much inclined to look upon such recoveries as *propter* rather than as *post hoc* results.

Serum treatment may disable the bacilli of diphtheria, but it cannot destroy them, or we should not see after its use postdiphtheritic troubles at all; and as they are still seen two very pertinent questions present themselves for solution: (1) Do postdiphtheritic sequelæ occur as frequently after serum treatment as without it? (2) are the sequelæ as severe?

Some years ago, at a meeting of medical men where diphtheria was being discussed, I asked if paralysis was less frequent after the serum treatment than ensued under other and older methods of treatment, and no one seemed to be in a position to answer; but since then most of us have drawn very definite conclusions for ourselves.

The reason why I asked the question was, that some years before that time, and therefore some time antecedent to the use of serum, I attended in

diphtheria two children, each 3 years of age, who seemed to have struggled successfully with their trouble and who, to all appearance, had become quite well, and in each case six weeks after the first onset of symptoms and between two and three weeks after apparent convalescence the children were noticed to be weak on their legs and within forty-eight hours both succumbed, dying unexpectedly from heart-failure; and those deaths suggested the question, when may we say that a diphtheria convalescent is cured of his disease? and it almost seems as if this absence of time-limit is just as indefinite now as it was twenty or more years ago.

I have heard much of the injurious effects of antidiphtheritic serum in the matter of eruptions, etc., but I have only seen one case, which occurred in a girl 8 years old, who, besides having the greater part of the soft palate covered with membrane, had also a copious, evil-smelling nasal discharge, and in whom the usual two injections, the strength of which after the lapse of a dozen years I cannot remember, seemed to have produced no good effect, whereupon I administered two more, which in a day or two were followed by a measley-like eruption over the whole of the trunk and limbs, and the larger joints all became swollen and painful; but she eventually made a good recovery without any postdiphtheritic trouble.

The case in favor of serum treatment suggests itself to me as follows: Given a case of illness exhibiting the well-known characters of diphtheria, I use, as soon as possible, a dose of 2000 units of this antitoxin, and on the following day I probably find a still larger surface covered with membrane, but the laryngeal symptoms certainly no worse. Twenty-four hours after the first injection a second is given, and then perhaps no more; on the third day of attendance I find that the further invasion of the mucous membrane of the fauces has been checked, and if the breathing has been bad it has now become distinctly easier, and the patches of false membrane have become undermined and perhaps actually smaller and the steam-kettle may be dispensed with, and in one, or at the most two days, more, no membrane is to be seen and the patient thereafter progresses rapidly toward recovery; and this desirable condition of the throat may be noticed earlier than the fifth, or be prolonged a day or two—in any case it is shorter than in the pre-antitoxin days. Unfortunately for some of my patients, for myself, and for the good name of the scientific product, this is not always the end of the disease.

About the time when the excessive heat-wave of last summer was passing over us I saw a family of four children, ranging from 7 to 14 years of age, who were suffering from diphtheria. A swab from the throat of the first

patient was forwarded to the pathologist, whose researches fully supported the diagnosis. Three of the children recovered, one of them having had no serum injection; the youngest died, and she had received two injections, each of 2000 units. The last patient had exhibited the usual routine with regard to the disappearance of membrane and other early symptoms; however, about twelve days from the onset of his illness he began to vomit, and this vomiting, unrelieved by treatment, continued until the end of the second day, when he died suddenly from heart-failure. During the greater portion of those two days the pulse at the wrist was barely perceptible and the extremities had been cold. This case was very similar to one I saw a few months back in the person of a boy two years younger, in whom the febrile condition and the throat symptoms disappeared satisfactorily after he had had two injections; but on the seventh day from the onset of his illness he also began to vomit, but the emesis was not so urgent as in the previous case and he lived a little longer. He also suffered from cold extremities and almost imperceptible pulse, and in addition he had breathing of the Cheyne-Stokes character, and had a tendency for liquids to return through his nose. In the first case we observe that the virulence of the poison settled on the cardiac and gastric branches of the vagus nerve, and in the second we see the bulb also affected, but more so, seeing that the pharyngeal branch of the vagus and the accessory branch of the spinal accessory were probably in fault.

To close my illustrative cases, I have to add that in the spring of last year I saw a boy who suffered from diphtheria and convalesced up to a certain point satisfactorily. Six weeks from the onset of his illness he exhibited a decided weakness in walking, a difficulty in swallowing, an inclination for his food to return through his nose, and bad articulation, from which untoward symptoms he recovered in about two months.

My personal conclusions, then, with regard to the hypodermic injection of antidiphtheritic serum in diphtheria is, that beyond all doubt it shortens the first stage of the illness, preventing further formation of membrane and causing the rapid removal of that already formed, and thus greatly diminishing the possibility of auto-infection, and it also makes the necessity of tracheotomy much less frequent than formerly; and I also have a very strong feeling that when tracheotomy is necessary it is much more likely to be successful when the patient has been placed under the influence of this particular antitoxin. And when this much has been said in favor of antidiphtheritic serum, we have, in my opinion, said all that can be advanced in its favor.

From the foregoing cases, which are doubtless typical of a multitude of others, it is possible to suggest that the diphtheria bacillus develops or sets

free in the early stages of the disease a toxin which is most deadly in its power over vital nervous centers, and that the toxin liberated when the bacillus is aged is much less powerful for harm, and takes a longer time to produce lighter results; further, I gather that notwithstanding the free use of antitoxin, the mortality is as great now as it was in the pre-antitoxin days; some people, indeed, say that it is greater. Be that as it may, in face of published statistics as regards both mortality and those postdiphtheritic diseases of bones, joints, and paralysis which eventually recover, it is obvious that the toxins of the disease have not yet been opposed by their true antitoxins and that the usefulness of antidiphtheritic serum in all the stages of diphtheria must be regarded as not proven.

I desire to add that I have certainly no bias against serumtherapy; my only desire is to ascertain the truth, to discard what is bad or indifferent in treatment, and to hold fast to that which is good until something still better is made known to me.

It seems to me somewhat strange that while health authorities are unceasing in their vigilance to improve the public health by introducing newer and improved systems of drainage, insisting that the homes of the people shall be built on strictly sanitary principles, that the supply of drinking water shall be unlimited and undefiled, diphtheria increases proportionately with the increase of population, in this respect being in striking contrast with typhus fever, which is practically never seen now.

The medical profession in times past have set up many idols for worship which afterward had to be thrown down. In my student days the carbolic spray had many of the most distinguished surgeons of the day as its devotees; later, iodoform took its place, and now surgical operations have a still greater success without the assistance of either. Let us not, then, without stronger proof of its utility set up a fetish in antidiphtheritic serum, and publish to a confiding public that there is peace when no peace exists.

THE NAUHEIM TREATMENT.

By ARTHUR G. DAMPIER-BENNETT, M.R.C.S. (Eng.) L.R.C.P. (Lond.),

Visiting Physician to the Royal Marine Hotel and Medical Baths Kingstown, Co. Dublin; Author of "Physical Methods of Treating Heart Disease" "The Reëducation of Coördinate Movements by Means of Exercise" etc., etc.

It is hardly too much to say that no single organ of the body causes such widespread manifestations of ill-health as a disordered heart. Consequently the greatest possible care and discretion in treatment is called for. On the

other hand it can hardly be denied, that when the key to the treatment of the particular form of heart trouble is discovered few organs respond more readily. Success in treatment, however, does not depend upon a single method or a single drug, but upon a thorough understanding of them all and discrimination in their several applications. Each method or combination of methods must be employed successively as the progress of the case seems to indicate. But, having once formed an opinion as to the nature of the case and determined upon the plan of treatment, the main outline of the selected plan should be adhered to rigidly and hopefully, unless it is obviously disagreeing with the patient. No modification in essentials should be made until satisfied that they have been conceived in error. I mean to say that, while it is not wise to ignore them, it does not do to be led too easily by the likes and dislikes of the patient. While accommodating his whims and fancies a too ready acquiescence may undermine one's own influence and his confidence. In this way the application of a routine method of treatment has its advantages. The patient may be more submissive if he is given to understand that such and such measures constitute the "treatment," and that if they are not done then the "treatment" is not being carried out. At the same time it is only right that the physician should be ready and willing to throw his own prescriptions to the winds when once satisfied of his mistake. No one can hope to go through life without making mistakes, but the best man is the one who not only makes the fewest, but who is ready to admit them and profit by their teaching. A mistake recognized and corrected is the surest stepping-stone to knowledge.

The Nauheim methods of treatment have of recent years been receiving the lion's share of attention, not only because of their comparative novelty, but because they have vindicated their right to rank as methods of very high importance.

The baths depend for their efficacy upon their temperature, their saline constituents and their gases. The temperature ranging as it does from 88° F. to 95° F. places the waters in the category of hypothermal and subthermal springs, and as I have shown elsewhere[1] is a matter of considerable practical importance. Upon the temperature at which the bath is prescribed depends also the amount of the active gaseous constituents. This is especially the case with artificially prepared baths. The cooler the bath the greater should be the proportion of the carbonic acid gas. I am not at all certain that the cutaneous hyperæmia resulting from the irritation of the gas does not facilitate the absorption of the mineral constituents. Of these the two most important are the chlorides of calcium and soda. That these are actually absorbed I do not think

[1] Physical Methods of Treating Heart Diseases (Wright & Co., Bristol, England).

there is reasonable room for doubt, but the question of interest is: to what extent do they influence the progress of the patient? In addition to the reasons I have advanced in another place for assuming their absorption is the fact that an ordinary salt-water bath at a temperature of 96° or 98° F. has a totally different effect to one five or six degrees hotter. In the case of spring water this is not so. Let me give an instance. A patient was ordered a bath of salt water at a temperature of 105° F. for sciatica, with the result that the pain for which it was prescribed became a great deal worse, whereas a salt bath at 98° F. improved him considerably. Ordinary water baths at similar temperatures had no influence upon him one way or the other beyond what might reasonably be expected to result from difference in temperature.

During the winter months it is advisable to increase the heat of the baths from three to four degrees. The climate of the British Isles is particularly suitable for the carrying out of this treatment. It is never too hot and very seldom too cold. The locality of Kingstown, however, makes it an almost ideal spot. Sheltered from the west and southerly breezes by the Dublin and Wicklow mountains the greater proportion of rain is deposited long before Kingstown is reached. The sea extending north, east, and southeast renders what would otherwise be and are in other parts of the United Kingdom harsh and trying winds comparatively mild. The net result is a climate which is wonderfully free from moisture, mild, and equable. For a period of seven years the difference between the summer and winter mean temperatures was barely twenty degrees. Another most desirable feature is the long pier which extends out into the sea a distance of close on a mile, forming a delightful promenade on which the invalid can walk or drive in a bath-chair and enjoy the sea-breezes from whichever way the wind may happen to blow. The value of a seaside climate can hardly be overestimated in connection with the Nauheim Treatment.

In addition to the baths at Nauheim certain movements have been introduced comparatively recently in which resistance is offered to the patient while he is performing them. Long before the Nauheim baths were known in connection with the treatment of heart disease they were celebrated for their influence upon locomotor ataxy. The arrival of a case of disseminated sclerosis for treatment some years ago when I was in Cork, at a time when my attention was particularly directed to the subject of the Nauheim baths, raised in my mind the idea that possibly systematized exercises with the baths might result in an improvement of his condition. I did not make any effort to apply my half-formed notions in that case as he had been sent for a special course of vapor baths and mercurial inunctions, but at the first opportunity I made the

experiment, using the pattern of the carpet to act as a guide for the movements of the feet. The first case treated was one of lateral sclerosis in a lady. There was sufficient improvement to encourage me to continue my experiments, and ultimately I contrived some charts which permitted the various movements of the limbs to be performed in an orderly manner.[2] At this time I was unacquainted with Dr. Frankel's work. The results of the use of these charts continuing to be satisfactory in the very few cases which I saw, I determined upon their publication in the hope that a more extended trial would confirm their value. About this time, through the medium of the British Medical Journal, I was able to introduce my method to a practitioner in South Wales who had a very severe case of locomotor ataxy to deal with. I sent him my movement charts and explanatory notes with the result that, at the end of a few days, he wrote and reported an improvement. This quite decided me to proceed with their publication without further delay. I merely mention these facts to demonstrate the possibility of utilising both baths and exercises for the treatment of other diseases than those of the heart. They seem to be of special service in functional diseases of the spinal cord.

Although the resisted movements are often spoken of as being an integral part of the routine of treatment at Nauheim, I do not think it advisable in every case to adopt them without some degree of preparation. The preparation may consist of absolute rest. The value of rest even in cases not strictly speaking bad enough to be confined to bed is very great, and may frequently be adopted with every advantage to the patient even though he may protest against being sentenced to bed for a day or two when the need is not obvious to himself. The subsequent procedures seem to exert their influence more decidedly. The indications for this line of treatment are œdema of legs, irregularity of the pulse, cyanosis, and easily excited dyspnœa. Anyone of these symptoms alone may be enough to make such a preliminary measure needful, their occurrence in combination almost certainly necessitates it. When the baths have been commenced the patient may still not be fit for active exercise; if this is so then passive exercises and massage should be employed. Massage must never be prescribed for the purpose of displacing dropsical fluid. If such a result follows its use, it should be as an indirect effect. Some patients who are intolerant of massage may be habituated to it by the preliminary use of faradism applied with a brush electrode.

Speaking generally I do not attach any value to the electric bath as ordinarily understood, but in suitable cases and at the conclusion of a course of the baths and exercises I make use of an electric bath on the four-cell principle

[2] The Re-education of Co-ordinate Movements by Exercise (Wright & Co., Bristol).

introduced by Dr. Schnee. There is no question that it exerts a most powerful influence and must be employed with the greatest caution whether the current be constant, interrupted or alternating.

The question of dietary enters very largely into the subject of balneological treatment. It is impossible to lay down hard and fast rules. The only thing one can do is to eliminate from the list of foods such things as one knows to be injudicious or peculiarly disagreeable to the patient, but, speaking generally, I must confess to a predilection for solid rather than liquid forms of nourishment, because they not only take up less room but promote peristaltic action and in this way may even assist the circulation through the gastric walls.

The methods of preparing foods, as well as the class of food selected, should also receive consideration; the avoidance of fats and greasy sauces must be enjoined.

The subject of alcohol is a thorny one, but it is one which can never be shirked. Sooner or later the question will have to be faced: may the patient have a little wine, or if not wine would you advise spirits?

The answer to the question must depend upon the age of the patient, his previous habits with regard to alcohol, the condition of his heart, and how digestion is affected. In a young person, it is obviously better not to recommend its use save and except so far as its use as a drug seems to be indicated. In an elderly person of moderate habits who has always been accustomed to its use, its discontinuance can not be undertaken lightly. Again, a man who has given way to indulgence cannot be deprived of it with impunity.

In both these cases the nervous system has learned to depend upon the ingestion of a certain amount of alcohol daily. Its withdrawal may be attended with evil results but this is no reason why an attempt should not be made to reduce the amount consumed.

On the whole it may be safely said that before a certain point or certain age is reached alcohol should not be given even in a state of health, and that after a certain point it cannot be withdrawn with advantage to the patient. Very few men under forty or forty-five require it; very few men over fifty can dispense with it. When the powers of life are waning it is not only a useful digestive but it is a capital stimulant and may be advantageously employed for its hypnotic effects.

To attempt anything like a discussion upon the employment of drugs at the fag end of a paper such as this would mean such brevity of treatment as to almost constitute it an insult to the intelligence of my readers. I must therefore forbear to mention them, but content myself with saying that no

method of treatment can be regarded as complete without them and that it is a mistaken conception of bath treatment which holds that their use may be dispensed with.

WRITER'S CRAMP AND ITS TREATMENT.

By DOUGLAS GRAHAM, M.D.,
BOSTON, MASS.

We see but few cases of writer's cramp nowadays and hear very little about it.

Sufferers from this consider it a foregone conclusion that nothing can be done for it, and some learn to run a typewriter or hire some one who can.

Physicians, by their disbelief of the efficacy of any treatment, have done much to foster this state of mind in their patients. We read in Scripture that on one occasion, even Jesus Christ himself could not work many mighty miracles, on account of the unbelief of those around him; while in the absence of this unbelief, we find no less than six references in the Bible to the devil and his emissaries working miracles. Saints or devils, we would all alike be able to cure writer's cramp and allied affections, and it is no miracle to do so, in the absence of what is called organic disease of the nervous system.

First, a few words as to the predisposing causes of writer's cramp. It usually occurs in those who are somewhat neurasthenic, and who write in great haste from the wrist, using the hand and fingers almost entirely for this purpose, and not combining the forearm and upper arm in the side-to-side movements, as they ought to do. The fingers, hand, and arm are generally perfect and powerful for every other purpose, sometimes unusually so, and objective symptoms are said to be lacking. Are they?

The writer has seen quite a few cases of writer's cramp, and in every one the space between the lower end of the bones of the forearm and the carpal bones has been unusually large: in other words, there has been too long a neck to the wrist. This favors the pernicious habit of moving the hand alone from side to side, thus obviating the healthful combination of forearm and upper arm in these side-to-side movements.

In order to get a case of writer's cramp well, it is largely a question of removing the fatigue, the over-excitation, the irritability, which accompany it, as well as a re-education in proper ways of writing. This involves a careful consideration of many things: the method of holding the pen, of forming the letters, the height of the desk and the position of the patient thereat, the state of the eyesight, of the nerves and muscles, etc. With some patients, a long period of rest would seem to be necessary before commencing treatment;

others can be kept at their writing and improve by the following methods: they should be taught how to hold the pen easily and not to grasp it tightly, and be shown how to vary the methods of holding the same, if they have not already found out for themselves. Holding the pen between the fore and middle fingers is one of the best methods of relief. The penholder should be of as large a size as will afford a comfortable grasp, and may be of cork or surrounded by a rubber pneumatic appliance at the lower end. The pen should be neither too soft nor too hard, the point of medium size, and the paper neither too smooth nor too rough, in order that a proper resistance may be offered, and the patient's attention not distracted thereby. The ink should be such as to show immediately what has been written. Jet-black is the best. The height of the desk should be on a level with the forearm when the upper arm hangs free by the side. It is often advantageous to change the angle of the paper from time to time, so that the patient may not get tired out from being too long in one position. Writing on a large book on the knee is sometimes easy, as it forms a good automatic tip-table instantly adjustable in any direction. The light should fall upon the paper in such a way as not to cast a shadow to the left, either from in front or from the right side.

Fine, complex movements, that are the last acquired, are the soonest lost. Therefore, re-education leading back to these should be gradually begun by teaching the patient to make long, parallel lines from left to right, and sometimes also from right to left. This is a good preparation of the upper arm for free-hand writing. After this, the patient should be taught to make whole lines continuously of large lllllllllllll's with wide interspaces, and also the reverse of these with equally as large spaces, mmmmmmmmmmmm's. These may be done either slowly or rapidly, so as to break up the habit that the patient may have acquired. With improvement and facility in execution, they should be gradually decreased in size. The advantage of this is that it trains the upper arm and forearm to coöperate with the hand in these movements that are so necessary for easy writing. Later a combination of letters and words must be devised to get the patient over any special hitches he may have. The word *legacy* offers a good combination for this purpose. After having made llllll's for a while, the patient can then practice *lelelelele* until it becomes easy; then *leg-leg-leg-leg-leg* continuously until this can be done with great ease, and so on to the end of the word.

When the patient has become somewhat proficient in writing, an excellent exercise is to write the capital letters of the English alphabet connectedly as far as he can. He can usually go from A to I without a break. The writer, after having devised and employed this method for years, finds that Professor

Zabludowski, of Berlin, has independently, and unknown to either of us, been doing the same thing.

Exercises of flexing, and extending, and separating the fingers, gradually increasing in vigor and duration, should be done three times daily. And for any one predisposed to writer's cramp, these exercises form a good preventive measure.

Careful and skillful massage of the fingers, hand, forearm and upper arm, and also of the upper part of the back, should be done daily for a while at first, and later every other day. It should not be that kind of massage that is so prevalent and consists mainly of allowing the hand and fingers to slip on the surface, but deep and searching and gentle without chafing the skin or bruising the muscles. Alternating with the massage, every few minutes, should be given resisted movements of supination of the forearm, of extension of the hand and of each finger separately. Much tact, skill, and practice are required to adapt these resisted movements to the strength of the patient, and no novice had better undertake them. When done properly, they are restful and invigorating in place of annoying and fatiguing.[1]

The writer, in an article on writer's cramp and allied affections, in the New York Medical Record of April 28, 1877, said of these movements which he first suggested, that they tend to restore a harmonious distribution of will, nerve and muscular effort by counteracting the motions that have produced the trouble. Dr. George W. Jacoby said of this suggestion that it was of more value than all that Julius Wolff, the so-called inventor of the cure of writer's cramp, had ever done. It was in 1882 that Mr. Wolff and the distinguished Drs. Schott, of Nauheim, got into an unseemly squabble as to the priority of the use of massage and exercises in the cure of writer's cramp, five years after the publication of my article on the same subject. Wolff had the best of the argument.

Editorial

PHARMACEUTIC CONTROVERSIES.

THE materia medica has been the storm-center about which all therapeutic wars have been waged. The history of the past is likely to be repeated in the future. The kind of warfare has varied: at one time the substance, at

[1] Further details of the symptoms and treatment of writer's cramp may be found in a "Treatise on Massage," by Douglas Graham, J. B. Lippincott Co., publishers, Philadelphia and London.

another the dose, at still another the source was the text of the polemic. Then came the era of therapeutic nihilism, predicated on pathology as the foundation of scientific medicine. But the patient began to manifest his preference for being unscientifically well instead of being scientifically dead, and then came the therapeutic awakening. The conscience of the practitioner was reached, and no longer was his duty considered to be done when, after a thorough knowledge of pathological anatomy, an anatomical diagnosis, no matter how histological, was to terminate his professional interest or the *post mortem* examination complete his satisfaction. This therapeutic awakening has shown itself in various ways: the patient demands more of his physician; the practitioner insists that the consultant shall not only confirm or make a working diagnosis, but also outline remedial measures; the graduate student is not, as formerly, content with instruction in diagnosis, but asks, as his right, that his teacher shall demonstrate new and improved methods of treatment; medical societies find that only programmes in which management of patient and of disease is prominent can bring out satisfactory audiences. The practitioner is to-day, more than ever before in the history of medicine, employing every effort to cure his patient. Investigations in laboratory and clinical pharmacology, in physical measures, in surgery, and in special fields of practice are pursued with the utmost care and their results placed before that most intelligent of all medical juries, the American general practitioner.

The present conditions of medical and surgical practice lead more surely than ever toward the cure of the patient, and, best of all, to this cure being brought about by scientific methods. At this time full recognition should be accorded to all the allies of the physician and surgeon: nurses, pharmacists, and manufacturers of medical supplies. Nor should we forget the work that has been done in studies upon institutional care, health resorts, and mineral springs. The field of therapeutics is too important that any worker in any portion, no matter how limited it may be, should be ignored. Because some individuals may fail to reach the ideals, the group is not to be condemned and made the theme for vituperation. Because some manufacturing chemists may not act according to an artificial standard set up by an editor whose past education and previous character hardly entitle him to assume the position of critic, general condemnation should not be extended to those who have freely given their resources for the advancement of medical science. An editor without moral or financial responsibility may be "ethical," according to his notions, in attacking those who have been and are contributing to the benefit of mankind; but "ethics" is not the science of right, but is the science of

duty, and while it may be right for one to embark upon a given line of conduct, it is the duty of an honest man to abstain when the harm is greater than the benefit. The therapeutics of the present is the result of self-sacrifice on the part of countless workers along diverse lines and in isolated fields: the sum total is progress. In this multitude neither Cassandra nor Thersites has any place.

REYNOLD WEBB WILCOX.

HEALING, THE JOINT PRODUCT OF CO-OPERATION.

With Special Reference to the Mutual Duties of Physicians and Clergymen.

THE sphere of usefulness of the physician too often exhibits limitations. Desired results frequently are not obtained. Dissatisfaction follows. Help is then sought elsewhere, sometimes with conspicuous success. An essential thing must have been lacking. Can we attribute this failure to faults in the methods employed, or to the omission of other measures promising greater efficacy in the instance? Popular opinion would, no doubt, declare that both are true. Let us admit this and proceed to push our inquiries deeper and try to learn if there be not factors even more potent which can, and should be, elicited. The universal desire is for each to be, and remain, free from disabling ailments.

The overwhelming majority of human derangements are preventable. A large proportion are psychoses, proceeding from alterations of consciousness, perturbations of the "spirit." The worst, assuredly the more persistent, ones are the products of long-continued evil habits, chronic vitiations of automatisms. Obviously the chief object to be secured is a restoration of the sick consciousness, whereupon the individual will become well. Many times, indeed most times, the consciousness is far from a normal one. Indeed, it is painfully true that it is rare to find a normal psyche, a perfect mentality, a person capable of forming symmetrical conclusions—in short, one equipped with powers of judgment. The causes underlying this state are due to both original defects, and morbid changes wrought by protracted complex disturbing factors. Some of these are capable of restoration, repair, or amelioration, but even then only in varying degrees. There follow almost inevitably certain residual damagements. Similar or different efficient causes may, often do, bring about later derangement. The cure, when possible, depends on the kind, quality, and persistency of education employed. This education is of a lifetime; is compounded of exogenous stimuli, suggestions from without,

and endogenous stimuli, promptings from within; also environment, opportunity, and other factors must be reckoned with, especially the degree of sincerity and persistence which the individual is capable of employing. It must be borne in mind that even under the most favorable conditions long-protracted psychoses exert a vitiation upon structure, the tissues concerned in the mental processes, which are rarely, if ever, capable of complete restoration. The factors involved are chiefly those of the vasomotor mechanisms, an exceedingly delicate and complex series of structures, intimately connected with the vegetative functions. There is a yet more important factor, the cells of the brain, the association fibers, the centers, groups of minute cells of the highest significance and delicacy. Damaging impressions, suppressions of normal impulse, irritations of diverse sorts and degrees unquestionably exert destructive effects, if not in whole, at least in part, which alter structure as well as function. Vital action is compounded of many items, but physio-chemistry is paramount. As Clouston has pointed out, in his eloquent and masterly description of the neuroses of development, the persistence of certain psychic perturbations producing irritation of the plasma, alterations in the integrity of the circulating fluids, leaves an indelible stain on developing cells. In the young person, among formative cells, there are thus produced peculiarities exceedingly persistent, never completely recoverable. In older folk the cells have become more stable, less subject to permanent change; but this, again, is wholly a difference of degree. It is true that our optimism need rarely, or perhaps never, to fail of hopefulness for repair, and to such a degree that, for all practical purposes, we are able to restore blighted consciousness in fair measure. It is logically inevitable that perfectability is only to be attained by the application of earliest, wisest, and most persistent salutary measures, of unmolested opportunities for symmetrical expansion.

In estimating the status of an individual, then, we must take into consideration not only these psychic states, but also whatever trace exists of the effects of antecedent agencies, of traumata, physical hurts of diverse sorts, of protracted disorders, as of digestion, metabolism, infections, especially those which are insidious, hence neglected wittingly or innocently, yet manifesting the effects of inadequate watchfulness by those in authority.

There often stands revealed to the physician, when examining for one suspected factor, the pitiable evidence of effects of earlier omissions of vigilance or conservative action. When all is said and done, that mother is probably the best who is over-anxious, who promptly consults some one, preferably one who is wise, at the first indication of departures from the normal. There are thus revealed, and put in a position to be corrected, many conditions which

might readily escape the observation of one who is over-optimistic, who trusts too completely to nature or to nature's God. How great a fire one small spark can kindle! All fire, all infections, all protracted bodily derangements leave an indelible stain of greater or lesser degree. It is a most dangerous fallacy to assume that the so-called childish diseases, meaning the lesser infections, are inevitable, harmless. To be sure, there is thus produced on the race a relative immunity, but at grave expense to the individual. All these can, and in due time will, be prevented.

It is plain that the limitation of all disease from infection, from faulty environments, from evil habits, from the complex causes inducing psychoses, psychoneuroses, from whatever source, can only be accomplished by corporate action. The physician's duty is to contribute a thorough knowledge of the natural history, phenomena, and limitations of disease. The clergyman may well be expected to furnish expert knowledge in a wide variety of perils, especially those bearing upon moral obliquities, psychologic variants, morbid impulsions, asymmetries in instinctive tendencies. It is he whose duty it is to train the spirit, the budding moral sense, to develop the factors which make for self-restraint, high ideals, the saving grace of faith, and point the way to the achievement of human perfectibilities.

He should sternly subordinate in himself all those natural human appetites for place, for controversies, academic transcendentalisms, which mar the integrity of some "pastors." He should be ever ready to proclaim, in season and out of season, that now, as in the past, this sad old world of ours can look for the solutions of its grave problems, the consolation of its griefs, the overcoming of its doubts, nowhere so much as to the teachings, character, and personality of the Nazarene. By so doing, by pointing the way to living a clean, self-restrained life, formed on the essential teachings of the greatest and most beautiful of human lives, we therein find our highest revelation of God's love, sympathy, and power. We thereby learn to be and remain well, free from the endless irritants, physical and psychic, which contribute so largely to and gravely aggravate all morbid procedures. Nor is it by much speaking that the good is effected, but by example as well as precept. By example: it is not enough that the men of God shall themselves be comparatively blameless; they must walk with man, as they would urge man to "walk with God." The teaching of Jesus touches life on every side. His voice has for the world a message, vital, necessary, practical. The machinery of "the Church" is huge, cumbersome, unessential, or worse. All doctrinal dissensions, all strife of tongues, and sectarian hostilities, are subversive of the laws of brotherly love. The crux of the matter is to redeem the world from evil. A large order this. It will keep any man busy and will occupy his utmost powers.

The teachings of the Church still offend by too much terrorism, exhortations to "flee from the wrath to come," and supplies far too little of practical training how to live so sanely, so sweetly, as to be and remain in efficient equipoise. The Church should teach practically how to develop that moiety of spirit which is our central force, so that we may constantly exhibit its refining influence on our daily acts. So shall we form habits whereby we can conquer erroneous, hurtful tendencies of the mind, and thus bring about a wholesome attitude of body.

By reason of this neglect there has arisen a variety of extra-mural cults, doing much good, but some harm, the members of which invade the prerogatives of both theology and of medicine. The basic principles on which all these apostles work is to begin aright at the fountain head of impulse; to conceive the human animal as a composite entity of spirit, and the bodily manifestation of the spirit, and to train man in lines formed upon a right appreciation of this concept of his being. They exhort him to take optimistic views on life; to act always up to his highest spiritual potentialities independent of the teachings of theology and of medicine. They promise man emancipation, not only from psychic terrors, doubts, and disorders; they guarantee him a perfectible existence here and hereafter; they claim to rescue him from bodily afflictions, which are explained to be due wholly to erroneous acts. In this manner of presenting the fundamental truths inculcated by Christ they may, perhaps, go too far; they assuredly overstate the possibilities by ignoring many actualities. The general utility of this point of view cannot, however, be advocated too earnestly. As in the history of all psychic movement exuberant enthusiasm may lead to the commission of many errors, some of them disastrous.

The remedy, to my mind, lies in a wise appreciation of the needs of mankind thus revealed. Clergymen should supply the kind and quality of teaching (which is so gladly welcomed) offered by those well-meaning, but often unbalanced, yet most successful, propagandists. In medicine, I am sure, the safe course lies in amplifying knowledge; in taking judicious, selective cognizance of actualities; in estimating exactly the results of experience and in reducing them to acceptable formulations. When this is done we may then apply the rules of exact science and work out the rationale, explain the underlying forces, and deduce fundamental principles.

It would seem that the same course should obtain in theology. Viewed from the standpoint of the physiologist, mankind consists of a constant quantity of variants. Physical and psychical peculiarities recur in definite proportions. We can only succeed in our endeavors to protect the race from

inherent harmful impulses or from hurtful influences by a nice appreciation of at least the essential factors presented. So in theology, in preaching the word of God—it would seem that far better, more permanent, results would follow from a broader recognition of physical peculiarities, of psychic idiosyncrasies, and in exercising a tactful cognizance of unconscious needs. I hear clergymen often remark courteously but disparagingly, that doubtless the Salvation Army, the Christian Scientists, Faith Curists, prophets of "New Thought," and of like instinctive world movements accomplish a vast amount of good. So they do. Their teachings are to be commended so far as they apply, honestly and faithfully, only legitimate, acceptable principles. The question is, Why should these unorganized, relatively irresponsible teachers be needed, be so welcomed, when organized churches, educated pastors, exist to do the appointed work which these aliens claim and accomplish? Why do thousands whose consciousness has not, however, hitherto been impressed by our ordained shepherds increasingly throng to these teachers, these metaphysical "healers?"

Plainly, they "offer the goods." They furnish the kind and quality of hope, of comfort, of "healing" which a large proportion of the community desire. They teach fundamental principles of right thinking and right living in a manner comprehensible and acceptable. They deliver the message which is wanted. They offer privileges, rewards, perfectibilities which vaguely shadow forth the primitive needs of humanity. They do more; they define and supply the yearnings of the human soul.

Remember, successful teaching must be adapted to the peculiarities of those taught. The mentality of most of us has in it more of emotion than of judgment; the exact, the critical faculties are rare.

If my friends of the clergy would exercise themselves more in the methods, the principles, shrewdly appropriated by these extra-mural cults and apply them in the manner found practically successful, they would hold their potential better. They could then not only heal bruised spirits, educate flabby consciousnesses, but they could go farther and repair many bodily ailments. We physicians are fully cognizant of the fact that at least nine-tenths of these bodily ailments are mere perturbations of the psyche. We have taught and emphasized this principle consistently, though not as constantly nor as forcibly as we should in everyday life. Both the clergy and clinicians often err in permitting over-scholasticism to lure them away from concrete homely problems which it is their duty to solve. We could solve these problems vastly better if we worked together to understand the factors, the variants, the elemental human needs, and above all, if we gave our undivided attention to learning how we might best seize hold of the inchoate consciousness of those who look

to us for aid. We should do much more; we should omit no occasion to better our methods, we should not fail to learn what is wanted and supply it. This could be done, in part at least, by revising our principles of action; by searching and formulating anew; by adopting the better methods of our competitors. If we are qualified to maintain our influence, to be, and to remain, leaders, teachers, pastors, doctors, we must continue to advance, to keep ahead of these shrewd irregulars, who invade our territories so successfully. Their success is evidence of our shortcomings. The underlying facts are the same: the deducible truths are the same. It is simply a question of presenting truths in such a form and manner as shall control the facts. And finally, there is but one creed, with a thousand interpretations.

J. MADISON TAYLOR.

Cyclopædia of Current Literature

ABDOMINAL PAIN IN RELATION TO ILEUS.

In estimating abdominal pain, and especially in connection with illnesses giving the symptoms of ileus, it must be borne in mind that pains do not originate in the abdominal organs supplied exclusively by the sympathetic fibers and vagus. All pains originate in the abdominal wall, more especially in the parietal serous membrane and subserous connective-tissue structures innervated by the cerebro-spinal nerves. Stretching of the parietal (mesenteric) attachments of the stomach and intestines, as well as of string or band-like adhesions to the abdominal parietes, invariably causes pain. The same holds true for the displacement of the parietal serosa from its normal relation to the muscles or aponeurosis of the abdominal wall. Most of the diseases connected with the ileus are, at their beginning, attended by increased and, as a rule, irregular peristalsis. Chemically different substances, such as the contents of the stomach, intestine, etc., cause severe pain when they come in contact with the healthy or hyperæmic parietal peritoneum (perforation pain). Even that form of peritonitis that goes under the name of peritoneal irritation (peritoneal Reizung) greatly increases the sensitiveness of the parietal serous membrane. The sensitiveness of the parietal peritoneum at first increases *pari passu* with the inflammation, but decreases as the inflammation reaches a certain high degree, and may even cease altogether. (Compare with erysipelas, especially gangrenous erysipelas of the skin.) The writer believes that we shall finally learn to understand completely the pains of ileus, though much still remains to be found out. K. G. Lennander (Journal of the American Medical Association, September 7, 1907).

APOMORPHINE IN ACUTE ALCOHOLISM.

The use of apomorphine is recommended by the author, in doses of from $^1/_{30}$ to $^1/_{10}$-grain, as a sedative and hypnotic in cases of acute alcoholism. A very few minutes after administering an

emetic dose by hypodermic injection, vomiting occurs, due to the action of the drug on the vomiting center of the medulla. Just before vomiting the pulse is weakened and increased in frequency, and after vomiting ceases it becomes slower and stronger, often stronger and slower than it was before the injection was given. Vomiting is preceded by salivation and slight nausea. It may occur only once, or be repeated several times. Very soon after the vomiting subsides, a matter of a few minutes in most cases, the patient falls into an apparently natural sleep and may sleep from two to eight hours, awakening refreshed, sober, and rational in most cases. It is not necessary, however, to give the emetic dose in order to obtain the hypnotic effect, and in many cases $^1/_{30}$ grain will induce sleep. C. A. Rosenwasser (Medical Record, July 27, 1907).

APPENDICITIS, TRAUMATISMS AND.

In a person whose appendix is healthy and contains no foreign bodies, a blow upon the abdomen or a violent effort will very rarely cause appendicitis. In a person who has had attacks of appendicitis, a blow upon the abdomen, even at a distance from the cæcal region, may relight a latent inflammation, and result in perforation of the appendix and danger to life. In a person with latent appendicitis, a violent effort, a fall, or a strain, may tear up adhesions, or the wall of the appendix itself, and result in perforation.

The maximum delay in an acute attack from the causes mentioned should not exceed two days. If an attack does not occur within this period, it is due to the traumatism received. If the patient recovers from an attack due to such traumatisms, and other attacks should follow, they could not properly be attributed to the traumatism. E. Jeanbrau and Anglada (Revue de Chirurgie, July, 1907).

ARTICULAR RHEUMATISM, ACUTE: TREATMENT.

Theoretical considerations led the writer to the belief that the action of the salicylates in acute rheumatism is largely due to the production of hyperæmia in the joints. To test this belief, he treated 68 cases with Bier's passive congestion exclusively. The results were good, and in cases of slight or medium severity a cure was usually obtained. The relief of pain was, as a rule, prompt and striking. However, out of 19 cases which proved refractory to congestion, 10 were promptly cured with salicylates, and in general the results with congestion were somewhat inferior to those obtained with the drug. He believes that the salicylates produce hyperæmia in the joints and exert also a slight bactericidal action, and advocates therefore a combination of the two methods. G. Klemperer (Therapie der Gegenwart, June, 1907; Boston Medical and Surgical Journal, August 8, 1907).

BERIBERI.

The following measures are recommended by the writer to prevent the outbreak of beriberi among people who are liable to be confined in buildings for any long period of time: The buildings should be well ventilated. There should be no overcrowding. The food supply should be ample in quantity and of good quality. The drainage should be perfect. The buildings should be so constructed as to get all the sunshine possible. Damp in the buildings should be avoided. The inmates should have regular exercise in the open air. The greatest personal cleanliness should be insured.

On the outbreak of the disease in an institution the inmates should be promptly removed from it and the following measures taken: The building should be disinfected, and then all the doors and windows should be kept open and fresh air and sunlight allowed to enter. The clothing should be disinfected, as well as the furniture.

Treatment necessarily must be empirical and symptomatic, the cause of the disease being unknown. Iron, arsenic, and strychnine have proved of benefit in the writer's hands. The effect of mercury is variable. Massage and electricity have also proved useful. W. V. Koch (Journal of Tropical Medicine and Hygiene, August 15, 1907)

CANCER, CONTAGION OF.

The accumulation of knowledge of the last few years enables us to formulate, much more definitely than we could before, the conditions under which cancer is likely or unlikely to be accidentally communicated from one human being to another. All cases of reputed contagion of cancer in which the disease is not of the same variety must be unhesitatingly rejected. Cases must not be accepted where there is no evidence that the affected parts of the two individuals were from time to time in contact. It is extremely improbable that contagion would take place from a covered cancer, such, for instance, as a cancer buried in the breast, or that the disease could be implanted in a part the covering of which has not been broken. These exclusions largely limit the number of possible cases of contagion, and the limitation is still greater when it is taken into account that sepsis of the tumor or of the broken part which comes in contact with it is an almost absolute obstacle to the success of accidental implantation. For it is notorious that cancers which are exposed for the most part rapidly become septic and ulcerate and suppurate.

The best evidence of the contagiousness of cancer is furnished by the occasional examples of successful implantation in different parts of the body of the same individual. Such cases have long been known under the name of autoinoculation. Probably the best example is where a squamous-celled carcinoma on one labium of the vulva of a female affects the opposite one, whether it be the labium majus or minus. It affects the opposite side of the vulva by direct contiguity as surely as a condyloma. Time only is necessary, and a certain amount of moisture, to make it invariably the rule. The writer gives details of fifteen cases of autoinoculation of cancer, undoubted and apparent.

For some years past surgeons have been more cautious than they used to be in dealing with cancerous growths, and many cases have been recorded in which there was reason to believe that recurrence was due to implantation during the operation rather than to imperfect removal of the disease. Cancers should not be cut into unless for diagnosis, and the wound should be tightly closed before the actual operation is commenced. The instruments which were used for the purpose of diagnosis must not be used again until they have been boiled. Exposed or ulcerated cancers should not be pressed against or dragged across raw surfaces made in the course of the operation. And care should be taken that breaking-down cancers should not be opened during operation. If they are opened by mischance, means should be taken to cleanse the surface of the wound and destroy the exuded contents of the cancer cavity. H. T. Butlin (British Medical Journal, August 3, 1907).

CANCER, LOCAL TREATMENT OF.

On the supposition that cancer cells differ but little from those in their immediate vicinity, except that they have degenerated and become weaker, and therefore are not so capable as normal cells of resisting the destructive effect of an agent used to demolish them, the writer recommends the use of irritants, not caustic in their effects, which, while not strong enough to destroy the vitality of the normal healthy cell, will succeed in killing a diseased one. As a result of some years' experiments he used an infusion of capsicum pods, the strength of which can be easily regulated, preceded by the application of a 2-per-cent. solution of cocaine, which, he thinks, aids rather than retards the destructive effect on the morbid cell. The strength recommended to begin with is one ounce of pods, broken up and infused in a pint of boiling water and decanted in a few hours. In a few days a crust will have formed, which will separate in a short time, when the condition of the raw surface will indicate whether or not a further application is advisable. So far, the author's good results have been confined to cases of epithelioma. R. Bell (Medical Record, August 24, 1907).

CARBOLIC ACID POISONING, IODINE IN.

Three cases are reported which demonstrate the great value of iodine as an antidote for carbolic acid. In two of the cases the iodine was given early, before any general toxic symptoms developed, and acted most beneficially in relieving the burns of the mouth and throat. In the third case all the general toxic effects were fully developed, the abdomen being tympanitic and the stools dark and slimy; yet the patient recovered. In all the cases the iodine was given in the form of the tincture. The doses varied from a few drops up to a drachm. The chemical compound formed as a result of the reaction between iodine and phenol is apparently harmless. For practical purposes it is probable that equal parts of tincture of iodine and carbolic acid are complemental. J. Maberly (Lancet, August 3, 1907).

CARDIAC EPILEPTOID ATTACKS.

Attacks of tachycardia may last for hours, days, or weeks. After a variable interval the heart tends to become exhausted, and irregularity occurs—in short, heart-block takes place. Stops are felt in the radial pulse, concurrently nervous symptoms arise which vary from the slightest feelings of sparks flashing before the eyes or the waving of a sheet before the patient, to severe epileptiform convulsions, with loss of consciousness. Yet such attacks are most certainly not epileptic.

From his study of such cases, the writer concludes that tachycardia is a pure neurosis, characterized by a great increase in auricular contractions from disturbed nervous influences. After a time, from over-exertion, fatigue or conductivity of the band of His occurs; missed impulses result, causing longer or shorter delays in the ventricular contraction. When these delays are sufficiently prolonged, cerebral anæmia is caused, followed in due course by the nervous symptoms described. Tachycardia being a neurosis, it is, like other neuroses, commonly recovered from. The condition may persist for years, and recovery may be complete, or relapses may occur from time to time. In bradycardia we cannot be hopeful, the ventricular pauses being due to serious structural changes in the band of His. Sclerosis of the vessels, fatty degener-

ation of the fibers, and an abnormal increase of fibrous tissue in the bundle have all been found. The condition is never recovered from, and the chances of sudden death from prolonged cessation of the ventricular contraction should not be forgotten. Life in true bradycardia is rarely prolonged for more than three or four years.

As regards treatment, rest, both physical and mental, so far as possible, is of the greatest importance. The head should be kept low and the foot of the bed raised. Any deviation from health, such as indigestion, constipation, gout, rheumatism, etc., should be attended to. Massage may also be employed. Bromides have no effect in tachycardia, either in lowering the pulse-rate or in controlling the fits. Nerve tonics, such as valerianate or oxide of zinc, seem to do good. Strychnine, atropine, and alcohol are better avoided. In bradycardia strychnine hypodermically, with heart tonics, such as digitalis or strophanthus, are sometimes helpful. Potassium iodide apparently brought about recovery in one case. F. H. Clarke (British Medical Journal, August 10, 1907).

CHLOROFORM ANÆSTHESIA, INJECTION OF SALINE SOLUTION PRELIMINARY TO.

The injection of saline solution before administration has a favorable influence in reducing the toxic action of the chloroform. The author considers that this is the effect of the dilution of the blood by the salt solution, the coëfficient of the absorption being reduced while the blood-pressure is kept high; at the same time the vagus remains more sensitive to stimuli. By this preliminary dilution of the blood, the writer claims, the organism can tolerate much larger amounts of chloroform without signs of intoxication. The infusion must be given just before the operation and must be as abundant as possible. Besides the lesser reduction of the blood-pressure, he states that the rapid recovery after the anæsthesia is especially striking. Owing to the lesser absorption of the chloroform, a larger proportion is eliminated by the lungs. The disagreeable by-effects, vomiting, headache, etc., are slight or entirely absent.

These favorable effects of preliminary infusion of salt solution were so unmistakable in the author's experiments on animals that the method was introduced into the clinic at once. Each patient about to undergo a major operation received an infusion of from 1500 to 2000 cubic centimeters from a quarter to a half-hour beforehand. The results were satisfactory. No by-effects from the infusion were observed. The patients all presented the same phenomena as the animals experimented on, namely lessened tendency to lower blood-pressure and the rapid recovery after the anæsthesia. It was remarkable to observe the good pulse even after prolonged general anæsthesia, and the absence of headache, vomiting, or nausea.

These preliminary infusions seem to be indicated most for patients with dubious heart and kidney action and in case of much debility and low hæmoglobin percentage. In extensive operations on the urinary passages, the infusion gives a certain feeling of security in regard to avoidance of the dangers inherent in protracted chloroform anæsthesia. Infusion after the operation seems to have little effect in mitigating the toxic action of the chloroform. L. Burkhardt (Archiv f. klinische Chirurgie, Bd. lxxxii, Nu. 4; Journal of the American Medical Association, August 31, 1907).

DIABETES, BASIS OF THERAPY IN.

Every diabetic patient shows a different degree of inability to utilize carbohydrates. Cases are divisible into: (1) Those in which the combustion of sugar and conversion into fat are defective; (2) those in which the combustion of sugar is defective, but its synthesis into fat is normal; (3) those in which the combustion of sugar is defective and the synthesis of fat begins to fall. The extent of undernutrition in diabetes may be gauged by the ketonuria or output of ketone.

The following conclusions are taken from von Noorden: Some diabetics tolerate 70 to 100 grammes of carbohydrates daily, but excrete much acetone. Many develop ketonuria by changing to a diet free from carbohydrates, and this continues when carbohydrate is again given, the prognosis being bad. Others, with strict diet, lose the ketonuria, at least for a time. Removal of carbohydrates improves the general condition and also the cause of the ketonuria. The ketonuria shows wide variations at different periods, even when diet and carbohydrate tolerance are constant, which cannot be explained. Different patients, with similar tolerance factors and the same diet, show different degrees of ketonuria. I. W. Hall (Practitioner, July, 1907).

DIABETES MELLITUS, OPSONIC INDEX IN.

The writer thinks the clinical value of the opsonin test may be considered in two distinct ways: as a diagnostic agent, and as a means of gauging the effect of the vaccination method of treating certain infectious diseases. As a diagnostic agent, it should not be used in diabetes, nor, indeed, is it necessary for this purpose. The opsonic index of a diabetic patient gives a clear idea, however, of the patient's resisting powers, of his susceptibility to secondary infection, and of the gravity of the inroads made by the disease. On the other hand, the opsonin test is very useful in the diagnosis of early tuberculosis, the index to the tubercle bacillus being very low or very high, the former suggesting predisposition, the latter showing infection against which the resisting powers are raised in defense. The most practical value of the opsonin test lies in its application to the vaccination method of treating bacterial infection, both the proper dosage of the vaccine and its effects upon the patient's powers of reaction being determined by the behavior of the patient's opsonic index during the period of treatment. J. C. Da Costa (American Journal Medical Sciences, July, 1907).

DYSENTERIC ABSCESS OF THE LIVER.

Liver abscess as a complication of amœbic disease of the colon always has amœbæ in its walls as the specific pathogenic organism of the disease. This complication can be reduced to a minimum by early recognition and proper treatment of the urinary and intestinal amæbiasis. Solitary abscesses, which are sometimes formed by confluence of more than one, are the only ones, so far, amenable to successful surgical treatment, which is by drainage. The best route to the liver for exploration and drainage is by transpleural methods, which avoid lung collapse. Early operations are most favorable, and over 90 per cent. of operable cases coming promptly under surgical treatment should recover. Most of the fatal operable cases are due to poor surgical judgment before much experience has been acquired. J. R. McDill (Journal of the American Medical Association, August 10, 1907).

DYSMENORRHŒA, PRIMARY.

The author advises a young woman during the period of primary dysmenorrhœa not to make any unusual physical or mental effort beyond her accustomed activity. The patient is in most cases quite equal to the performance of her daily tasks. The constant calling attention to the activities of the organs of generation does not seem wise, although the young woman's guardians should see that she is properly instructed on all physiological matters relating to her future welfare. When the pain or discomfort is excessive, it is wise for the patient to remain in bed while it continues severe, adopting preventive measures during the intermenstrual period. Anæmic girls who are leading lives of close confinement will be greatly benefited by spending an hour or two every day in outdoor exercise. After forming the habit of daily outdoor exercise, and observing care as to diet, patients are often amazed at the improvement in their symptoms. It is a wise precaution to empty the bowels thoroughly before the expected period, as it often materially decreases the pain.

During the period hot drinks and the application of external heat are of benefit; a hot sitz bath will add greatly to the patient's comfort, and a few small and repeated doses of phenacetine. During the intermenstrual period the patient should take hot douches twice a day, avoiding colds, and keeping the feet warm and dry. Daily exercise, nutritious food, faradism when indicated, and tonics to build up the constitution are necessary. Some cases are benefited by dilatation and currettage, but not all by any means, and it is best to employ medical means with the hope of benefiting the patient before resorting to harsher measures. Hydrastis combined with nux vomica has rendered good service in very many cases, the only drawback being the fact that it must be continued for a lengthened period, usually two or three months, and that it has a disagreeable taste. There are now other remedies on the market containing hydrastis and also viburnum. Some patients object to taking such drugs indefinitely, and for such apiol, 5 minims, in capsule, three times a day during the week preceding menstruation, will be acceptable; or tincture of pulsatilla in 5-drop doses, three times a day during the week before the expected period, will be found useful. In all cases the patient should keep the skin and other eliminative organs active, should avoid colds, have daily outdoor exercise, and endeavor to keep the nervous and other systems in healthy condition by wholesome, nutritious food and tonics when necessary. Maude Glasgow (Medical Record, August 3, 1907).

ERYTHEMA NODOSUM.

The arthritis which accompanies some cases of erythema nodosum is thought by most observers to be of rheumatic origin. The writer's own experience is that the signs or a history of chorea, endocarditis, or arthritis are not found in more than ten per cent. of all cases of erythema nodosum. The disease differs from rheumatic fever in that it more commonly attacks females than males, and is most prevalent in the autumn, winter, and spring, while rheumatism is most common in summer. A long period of prodromal malaise, comparative freedom from the risk of recurrence, slight constitutional disturbance during the pyrexial period, and the presence of phlyctenulæ in the eyes are also characteristic of erythema nodosum. The arthritis may differ entirely from that met with in rheumatic fever, and

it, together with the pyrexia and rash, are but little influenced by the administration of salicylates. J. O. Symes (British Medical Journal, July 27, 1907).

FLATULENCE.

Flatulence is classified by the writer as (1) primary, (2) more frequently associated with other ailments. Clinicians have now convinced themselves that flatulence may exist without any serious consequence for a long time. In most instances there is no real augmented fermentation of the food. Often belching is explained as the result of swallowing air. In ischochymia, in which there is almost always undue fermentation and decomposition of food, the patients do not suffer much from belching of gas. An increase in the formation of gas is encountered in acute and chronic gastric catarrh. Habit plays an important part in this trouble; when asleep or when the attention is actively occupied, belching is not liable to occur. The need for it occurs when the thoughts turn to the vegetative functions, but there is no necessity to respond to the temptation.

In primary flatulence the patient should restrain belching. No restriction of diet is necessary. Carbonic acid beverages and gas-forming foods should be avoided; nerve sedatives may be helpful. In secondary flatulence the primary trouble should be treated. Fluids should be aspirated. Iodides, digitalis, etc., should be administered, and the patient should take small and frequent meals. M. Einhorn (Medical Record, September 14, 1907).

GASTRIC CARCINOMA, FEVER AS A SYMPTOM OF.

Fever has been described by some authors in as many as 27 per cent. of all cases of cancer of the stomach; but if attention be directed only to those in which fever is constantly noted while the patient is under observation, and in which it may be supposed to be really a symptom of the disease, few cases will be found. The author inclines to the view that in some cases, at any rate, it is due to the cancer itself, and not, as some have thought, to secondary infections. For it is not confined to cases where the growth has ulcerated, and it is not attended by the rapid physical deterioration which might be expected if it were due to secondary infection. The type of fever is characteristic, a remittent quotidian fever, varying for the most part between the limits of 37.5° and 38.5° C. The elevation of temperature, which reaches its height in a few hours, is not preceded by shivering and illness. Defervescence is usually followed by profuse sweating. There is no leucocytosis. The fever hastens the patient's downward career, but it does not produce the well-marked and speedy wasting which might be expected.

Two cases are recorded by the author, who reproduces their temperature charts for the time of their stay in the hospital. The first patient was a man of 50, with pain at the epigastrium—at first two hours after food, getting worse during the last year, and at last becoming almost continuous—a lump the size of a fist palpable just below the xiphoid cartilage, and a hard and nodulated liver. An hour after Ewald's small test-breakfast the stomach yielded 73 cubic centimeters of food slightly tinted with fresh blood. There was no free hydrochloric acid, but slight traces of lactic acid. No cancer cells found. The patient was in hospital from November 6th to January 4th, and his weight fell from 53 to 49 kilos. He lived three

weeks after leaving the hospital and continued to suffer from fever of the same type, unaccounted for by any coëxistent respiratory, urinary, or other disease. The second patient had similar symptoms, except that no lump could be felt. He died rather suddenly after being in hospital for twenty days and losing 3 kilos in weight. Post mortem there was found an ulcerated new growth in the pyloric region, opening by a large rent into the peritoneal cavity. G. Spelta (Gazz. Med. Ital., May 16, 1907; British Medical Journal, August 3, 1907).

HEAT-STROKE.

The writer has demonstrated by personal and other experiences and much research that the effects of heat prostration are the result of concentration of the blood, entailing destruction of red corpuscles, with consequent escape of hæmoglobin into the blood. The excess of hæmoglobin leads to sudden intense destruction of white corpuscles—accompanied by high temperature—and consequent accumulation of fibrin ferment in the blood. This leads to coagulation at points in the capillary system, especially in the lungs and brain. Excessive loss of water in sweat is the main factor in the development of heat-stroke, and copious drinking is important in its prevention. When after profuse perspiration, the skin begins to dry off, heat-stroke, that is, general anæmia, is impending. If relief is not soon obtained the victim becomes unconscious and hovers on the brink of the grave.

In treatment, besides combating the high temperature and defective respiration and heart action, it is important to supply more fluid to the organism. This, the writer says, will protect the red corpuscles and prevent further escape of hæmoglobin into the blood. That already in the blood should be removed by venesection. He advises removal of from 100 to 200 grams of blood from a vein, followed at once by infusion of salt solution through the same hollow needle. The lumen of the needle should be large enough to allow the escape of the morbidly thick venous blood. Senftleben (Berliner klinische Wochenschrift, July 1, 1907; Journal of the American Medical Association, September 21, 1907).

HYPERTROPHIC RHINITIS, GALVANO-CAUTERY IN.

From a careful analysis of 100 private records of consecutive cases, the authors conclude that, for the intumescent and hypertrophic form of rhinitis, uncomplicated with deviation or exostosis of the septum, the galvanocautery is the best method of treatment, and if the exostoses or deviations are of slight or moderate degree, the cauterizations of the turbinal bodies will suffice to give relief without the necessity of a septal operation. The dangers of middle-ear infection have been greatly exaggerated, only one case among several thousand cauterizations having come under their observation. The liability of adhesion formation is not great, provided care be taken to avoid injury to the opposite septal mucosa, and provided that when the subsequent swelling is marked a probe is passed between the opposing surfaces the fourth or fifth day.

In the vast majority of cases a 4 per cent. cocaine solution suffices to cause local anæsthesia. They guard the solution with small quantities of atropine, strophanthin, oleum caryophilli, and carbolic acid, which add to the anæsthetic properties and appear to prevent the constitutional effects of the cocaine.

From three to six applications of this on a cotton-wound applicator will suffice. If there is marked intumescence a spray of adrenalin chloride or suprarenalin (1 grain to the ounce) materially aids the anæsthesia. The danger of destroying too much mucous membrane is avoided if the cauterizations are linear and properly done; indeed, the authors believe that the full amount of healthy mucosa is left by this method. Scab and crust formation is not more likely to occur with this than with any other method, and no packing is required to prevent hæmorrhages. There is also very little pain after cauterization of the turbinates. E. F. Ingals and S. A. Freidburg (Journal of the American Medical Association, August 3, 1907).

INFECTIOUS DISEASES, ACUTE, PRODROMATA OF.

By the prodromal period of an acute infectious disease, the writer means the stage that intervenes between the first symptom of illness and the rash or some other characteristic sign. *Scarlet Fever.*—Here the prodromal period is short and there is not much room for variation in the initial symptoms. Sore throat may be present before the rash appears, especially if the latter be delayed, when the throat symptoms are apt to be marked (scarlatina anginosa) and the case to be diagnosticated as one of diphtheria. The same mistake is common where the rash does not appear at all, but there is usually continued fever, great restlessness or delirium, much swelling, and pain in the fauces, with no definite false membrane and no good results from the administration of diphtheria antitoxin. Vomiting is a common early symptom; the more severe it is, the more severe the attack of scarlet fever, as a rule. Prodromal rashes are extremely rare, if they occur at all. Exceptionally the rash may commence on the extremities, and the only sign may be a punctate eruption. *Diphtheria.*—Here the onset is so insidious that it is often well advanced before it is recognized. *Rubella.*—The rash of this disease almost always appears synchronously with any other symptoms. But in some cases there is antecedent superficial glandular enlargement. *Measles.*—The initial symptoms of measles are notoriously variable. Prodromal rashes are common, the most frequent being a punctate erythema, usually restricted to the trunk. Another common rash is an erythema, consisting of small, discrete papules, affecting chiefly the trunk and face. A third rash is urticaria, which is usually universal. These rashes generally come out on the first day of the disease, are accompanied by a rise of temperature, but not by catarrhal symptoms, and disappear before the proper rash comes out. Remission is fairly frequent, all or many of the early signs of measles being present, and disappearing after twelve to twenty-four hours. After twelve hours to four days the constitutional symptoms recur, and the rash comes out. Laryngitis is a frequent initial symptom, and may be so severe as to lead to the diagnosis of "croup." It usually passes off when the rash comes out. Koplik's spots are the most important of the early diagnostic signs, and are pathognomonic, not being found in any other disease. By their timely recognition, errors based on prodromal rashes, remission, and laryngitis may be avoided. They usually come out early on the first or second day. *Varicella.*—Here there is usually no prodromal period, but occasionally a punctate scarlatiniform

erythema is present. *Typhoid Fever.*—This is most protean in its modes of onset. The characteristic spots may come out in the first twenty-four hours, or be delayed six weeks. Special organs—the lungs, the brain, or the kidneys—may bear the brunt of the disease from its earliest stages, and lead to diagnoses of pneumonia, meningitis, or nephritis. In some cases an erythematous rash may occur during the first few days. E. W. Goodall (British Medical Journal, August 17, 1907; New York Medical Journal, September 7, 1907).

INGUINAL HERNIA.

All evidence is in favor of the view that the main factor in the causation of inguinal hernia at all periods of life is the presence of a preformed sac, a patent funicular process, and whether the bowel will or will not enter this funicular process depends primarily upon the size of the opening at the internal abdominal ring, and, secondarily, upon the strength of the muscle guarding it.

As a general rule, the only satisfactory way of treating a hernia is by means of an operation; and, other things being equal, the earlier in life the operation is performed the better. The essential point in the operation is to so completely obliterate the sac as to render the peritoneal surface at this level free from any dimpling or depression. In order to do this, the inguinal canal should be opened up, and the divided aponeurosis of the external oblique subsequently united by overlapping, for the inguinal canal is thus lengthened and strengthened, and its original obliquity restored. R. W. Murray (Liverpool Medico-Chirurgical Journal, July, 1907).

INTESTINAL AUTOINTOXICATION, CHRONIC.

The writer states that a diagnosis may be reached by consideration of the following: In the gastrointestinal tract one must consider Rigg's disease, various stomach troubles, functional changes in the colon, and retention of fæces. In many of the cases there is an increase of indican in the urine, calcium oxalate, uric acid and urates, and red corpuscles. In a third of the cases polyuria alternates with oliguria. There were menstrual disorders in half of the cases in females. Nervous symptoms were present more frequently than any other condition, except Rigg's disease. In many cases there were cardiovascular changes, more than half being due to neuroses and to myocardial conditions. In two-thirds of the cases there were locomotor symptoms, gouty joints, and muscular disorders. In a third of the cases there were skin lesions. The author asserts that the final diagnosis of chronic intestinal autointoxication is not easy, and in the seventy-seven cases analyzed it was finally made in only ten. F. Forchheimer (American Journal of the Medical Sciences, July, 1907).

LARYNGISMUS STRIDULUS.

Laryngismus stridulus, contrary to the general belief, may not only arise quite independently of rickets, but may affect healthy-looking infants a few weeks old. Even when associated with rickets the connection is probably a purely accidental one. The writer believes the spasmodic seizures to be an essentially reflex act, which occurs only as the result of a definite local stimulus situated usually in the nasopharynx. It is allied with rickets in so many cases merely because the nervous system in that disorder is in a state of heightened

nervous susceptibility, so that it responds with exceptional activity to every peripheral irritation. In many cases the spasmodic movement is not confined to the larynx, but involves the gullet as well.

The treatment consists in removing the cause. In mild cases, where the nasal catarrh is slight, a few drops of a weak resorcin solution instilled into the nostrils will soon put a stop to the disease. In severe cases, however, the nasopharynx must be scraped before local remedies will give relief. Where there is spasm of the gullet, the child may have to be fed through a tube for days. During a seizure, the tongue should be hooked forward by a finger passed into the throat, or by tongue forceps. Artificial respiration may be necessary, and should be persevered with a long time. E. Smith (British Medical Journal, July 20, 1907).

MORPHINE, CONSTIPATING ACTION OF.

Observations on the effect of morphine on the intestinal tract are described by the author. These were made mainly on cats, though some dogs were also used. Nothnagel maintained that therapeutic doses of morphine stimulated the splanchnic inhibitory fibers and in this way checked intestinal motility. Some observers have agreed with this view, others have opposed it, but most of them regarded the small intestine as the chief site of the morphine action. The writer found by means of radiographic observations on cats in whom diarrhœa had been induced by milk diet, that it is the stomach that is most affected by the alkaloid. The constipating effect is not produced through the sympathetic inhibitory fibers, for section of these in the experiment animals did not modify the results. The chief action of the morphine consisted in a persistent contraction of the stomach-wall in the neighborhood of the so-called sphincter of the pyloric antrum. At the same time the pylorus retarded the passage of the food into the duodenum so that it entered the small intestine much belated, and then only very slowly and in small portions that were more fully digested than usual. The small intestine was but slightly affected, and the colon least of all. The author reminds the reader that these results as yet apply only to the two varieties of animals experimented on, and suggests careful clinical observations with a view to estimating the fidelity with which the conditions in man are reproduced in the animals. Magnus (Münchener medizinische Wochenschrift, July 16, 1907; Medical Record, August 17, 1907).

MOVABLE KIDNEY IN THE GENESIS OF BILE-DUCT DISEASE.

The writer considers that the inception of disorders of the biliary tracts arises from traction or pressure on the bile-ducts by a prolapsed kidney. At first there is but slight mobility, slight traction, and a slight attack, of a "bilious" nature, with or without jaundice. It is owing to the transitory nature of the attacks during its incipiency that examination is but seldom made, or the kidney cannot be palpatated because it has slipped back, as soon as the patient lies on her back, and the gall-bladder empties itself as soon as the tension is released. The mobile kidney gradually increases in size and mobility, exerting greater traction, causing greater obstruction, greater bile stasis, greater colic and jaundice, with infection, precipitation, stone formation, ulceration, perforation, and sometimes cremation.

These attacks can almost always be arrested and the diagnosis established by placing the patient in a bed with the foot raised ten inches, and replacing the kidney by careful manipulation. By the early recognition of the kidney mobility as the cause, in the early stage of the disease, and the early wearing of a special corset, exacerbations can be prevented, further progress of duct disease avoided, gall-stone formation eliminated, operations for its removal reduced to a minimum, and at the same time, by the use of the corset, the bad effects arising from ptosis of other abdominal viscera are overcome.

When pain, fever, and jaundice do not diminish or subside within twenty-four to forty-eight hours, or unmistakable signs of severe infection or peritoneal invasion are present, operation should be performed quickly and thoroughly. A. E. Gallant (New York Medical Journal, September 14, 1907).

MYALGIA, IMPORTANCE AND TREATMENT OF.

The importance of differentiating between neuralgia and myalgia is emphasized by the writer, especially on account of the liability of the latter to be mistaken for an affection of some vital organ, and directs attention to the efficacy of proper treatment. The painful points in neuralgia generally correspond to the points at which the nerve emerges from the bone or comes toward the surface. In myalgia, the pain is usually located in the muscle itself, and is always distributed over a much larger area than in neuralgia, while the tenderness persists during the intervals between the attacks of pain. There is also generally a zone of hyperalgesia above the affected muscles, but it does not parallel the course of the nerves. The myalgia generally develops by preference where the muscle is thinnest and most exposed. In the writer's illustrations the myalgic points are seen to correspond to the points where the muscle blends into its tendon, and they are generally at the edge of the muscle.

Myalgia has been found by the author to be rebellious to electricity, massage, and the salicylates, but has always yielded promptly to injections of a 0.2 per cent. physiologic salt solution, directly into the muscle. Several injections are made at different points over the painful area, and repeated later if necessary. In one instance, an elderly patient was suddenly attacked with pain in the precordial region, which recurred spasmodically several times a day and radiated into the arm. Nothing abnormal could be found in the heart action except a rhythmic dropping of every fourth beat. The writer was able to determine the existence of myalgia of the upper part of the free margin of the pectoralis major. Injection of the salt solution cured the myalgia and the nervous symptoms, including the cardiac aryhthmia, also vanished.

The author thinks it probable that the form of angina pectoris in which benefit is obtained from massage is probably myalgia. In the epigastric region it is liable to be mistaken for a stomach trouble. The affected part of the rectus muscle may exert pressure on the stomach, especially when that organ is distended after a meal, producing symptoms simulating "nervous dyspepsia." The reflex symptoms of myalgia may include headache and vertigo and pains in the compensating sound muscles, as in myalgia of the gluteal muscles, in which the pains are generally referred to the outside and calf of the

leg. G. Peritz (Berliner klinische Wochenschrift, July 29, 1907; Journal of the American Medical Association, October 5, 1907).

OPIUM IN ACUTE DISEASE, CONTRAINDICATIONS TO THE USE OF.

There are certain contraindications to the administration of opium in acute diseases, some precluding its use altogether, while others suggest that only small doses may be given with safety. If the lungs are embarrassed with a considerable amount of fluid arising from any cause, as met in the œdematous cases often observed in acute disease in old people, or in those suffering from heart weakness, opium should be avoided, any ease resulting from its use being too dearly purchased. The susceptibility of young children to the drug, as a rule, precludes its use in their acute diseases, except in such conditions as cholera infantum, in which its specific action on the intestines may be valuable. In older children opium should be given in moderate doses only, and its effect should be carefully watched; the same is true in respect to aged patients.

With regard to high arterial tension and other signs of chronic nephritis, the fact that opium is excreted almost wholly by the bowel and scarcely at all by the kidneys, and that it may be given in uræmia with safety, might show that this condition might not contraindicate the use of opium. This may be the case when the disease is strictly localized, as in some limited acute inflammation or spasmodic contraction of a muscular tube; but when the acute disease is of general or infective character there is certainly, as in instances of chronic renal disease, a special danger that respiratory complications, such as diffuse bronchitis or pulmonary œdema, may supervene; consequently opium should be used with great caution, if at all. Digestive disturbance, headache, and marked constipation are in lesser degree, contraindications. In any acute abdominal disease, if the question of operation is to be raised, care must be taken to give opium in such moderate doses that, while immediate pain is relieved, the clinical picture is not obscured. Bousfield (Practitioner, Vol. lxxviii, p. 663, 1907).

PERITONITIS, RECTAL INJECTIONS IN.

A thorough trial has been given by the author to the method of treating diffuse septic peritonitis by means of the introduction of large quantities of fluid into the rectum, and he concludes that there are few recent therapeutical measures equal to it in value. He has thus treated 19 consecutive cases of general peritonitis, with but 2 deaths, and feels that several of the patients recovered solely because of the continuous administration, by the rectum, of saline solution over a period of two to four days after the operation. He also found the procedure of great value in cases of partial and complete gastrectomy. He uses a rectal tube one foot in length, made of pewter, and with a slightly bulbous extremity. It is perforated at the ends and on all sides, so that the fluid can easily pass in and flatus pass out. The tube is introduced about two or three inches, and at the anus is bent sharply so as to lie easily on the bed. It is connected with the flask holding the saline solution by means of a long rubber tube. The flask is immersed in a bath of hot water, kept at the proper temperature by means of a lamp. The best temperature is from 100° to 102° F. If it is hotter than this it is not retained well. The flask

should be elevated so that its base is from three to six inches higher than the rectum. The saline begins to flow and continues to flow at the rate of about a pint an hour. If a feeling of tightness or distress is caused, the flow is too rapid. If the rate of flow be properly regulated and the temperature of the fluid not altered, from seven to ten pints can be introduced without interruption. If the fluid acts as an enema, the tube can be replaced after the bowels have acted. Care and constant attention on the part of the nurse are necessary to make the administration a success. The change in the appearance of a patient who is absorbing fluid so rapidly is very remarkable. The pulse improves, the eyes grow bright, urine is passed in large quantities, and the skin becomes moist. The patient's aspect is one of comfort and contentment. B. G. A. Moynihan (Lancet, August 17, 1907).

PHLEGMASIA ALBA DOLENS.

Although most of the complications of the puerperium have greatly diminished with the introduction of aseptic methods, thrombosis of the veins of the leg still occurs in its former ratio, or has even increased in frequency. Doubt, therefore, arises as to the agency of infection in producing this lesion, and the writer reviews the theory of coagulation of the blood and shows that there are conditions in the puerperal uterus which furnish chemical stimulants to the coagulation of the blood in the absence of any infection. This tendency to coagulation is increased by the inactivity of the liver, whose normal office is to oppose undue coagulability of the blood. The author believes that injections into the uterus, especially of solution of mercuric chloride, increase the tendency to coagulation. According to him, phlegmasia alba dolens may occur after delivery in consequence of the insufficient action of the liver, or from the presence of dèbris in the uterus, or in consequence of injections. Precautions to avoid these conditions are, therefore, indicated.

The author has also noted that this condition is frequently associated with membranous enteritis, and believes that an aseptic phlebitis of the uterine veins may begin before labor from the autointoxication due to intestinal disease. This condition is indicated by a pain in the side of the abdomen. This aseptic phlebitis may lead to embolism or may extend to the veins of the leg, producing milk-leg. The obvious inference is that special attention should be given to the condition of the intestines during the latter months of pregnancy. G. Keim (Presse Médicale, Vol. xv, No. 57; Journal of the American Medical Association, September 14, 1907).

POSTPARTUM HÆMORRHAGE, TREATMENT OF.

In cases of postpartum hæmorrhage due to atony of the uterus, the writer has tried with great satisfaction a method of hæmostasis, which he has not seen mentioned in the literature. In several instances he has been able to arrest completely a profuse hæmorrhage. A sterile towel should be placed over the abdomen, or if this is not at hand, a laundered towel, soaked with a 1 to 1000 solution of corrosive sublimate, acts as a good substitute. Now the external hand grasps and firmly kneads the fundus and presses it down into the inlet. The other hand, incased in a sterile glove, is passed into the vagina up to the cervix. The fingers then attempt to seize as much of the cervix and lower

uterine segment as possible, and the hand is forced far into Bandl's ring until the fundus is reached. The external hand remains outside the uterine cavity throughout the operation. If sufficient pressure be used the internal hand can be forced well into the fundus and past the contraction ring, pushing the cervix and lower uterine segment before it against the walls of the fundus. This obliterates the cavity of the uterus, and brings direct pressure and compression to bear against the sinuses and open vessels. The position of the internal hand or fist in the fundus, yet outside the uterus, has a marked effect in stimulating contraction, especially when aided by brisk massage. H. M. Stowe (Surgery, Gynæcology, and Obstetrics, June, 1907).

PRURITUS ANI, ETIOLOGY AND TREATMENT OF.

It is sometimes impossible to ascertain the cause of pruritus ani, but in the large majority of the cases the following are the most common exciting causes: Constipation and fæcal impaction; local disease of the rectum or anus; want of cleanliness in the anal region; pediculi and seatworms or vegetable parasites; constitutional or systemic disease; diet and irregular habits. Again, pruritus might also be a reflex phenomenon of uterine or bladder disturbances, excessive and perverted sexual indulgence, and, lastly, some disease of the brain and cord, or senility.

In the treatment of pruritus ani the cause must be sought for and removed. Where no distinct cause can be found the diet must be regulated. Meat should be used sparingly and overseasoned food avoided; likewise alcoholic stimulants and tobacco, tea, and coffee. The author finds a soothing application most reliable: ℞ Chloral and camphor, 3iv; rub these into an oil and then add: Unguenti simplicis, pulv. acidi boraci, of each, 3iv. M. Sig.: Apply with a brush three times daily after cleansing the parts with hot water. In some cases the addition of 20 grains of carbolic acid, in others again 20 grains of menthol, is extremely beneficial, and is often sufficient to secure a good night's sleep. Where more heroic measures are required he employs successfully pure carbolic acid, the saturated solution of nitrate of silver, or the Paquelin cautery. H. A. Brav (New York Medical Journal, August 3, 1907).

PYELITIS IN INFANCY AND CHILDHOOD.

Three groups of prominent symptoms were observed by the writer in a series of cases of pyelitis: (1) Fever, intermittent in character, progressive emaciation, and constipation; (2) bed-wetting and pain in urination, passage of small quantities of urine at a time as if pain prevented free urination, absence of fever during the entire disease; (3) digestive disturbances indicated by the passage of scybala and fæces mingled with shreds of membrane, anorexia, and little if any fever. The diagnosis of the disease was made by microscopical examination of the urine.

A review of the writer's cases shows that pyelitis suggests intermittent fever, and that it is occasionally seen in infancy in an afebrile form; also that if it were not for the enuresis no symptoms associated with the genito-urinary tract would have directed attention to the kidneys. Treatment consists in rest, careful hygiene and diet, benzoate of soda, and urotropin. L. Fischer (Archives of Pædiatrics, June, 1907).

RADIUM EMANATIONS, EFFECT OF, ON MAN.

The use of water impregnated with radioactive substances has been found to be beneficial in cases of certain affections, both when added to the water used for bathing cures and when given internally. A favorable effect is to be observed in cases of chronic articular rheumatism of moderate severity, regardless of whether the condition started as a chronic affection from the beginning or was the result of an acute or subacute invasion. Typical cases of arthritis deformans are not susceptible of improvement in this way, and the author believes that this fact may be of use in differentiating this obscure symptom complex from the true rheumatic affections. Another group of affections capable of being influenced by the emanations consists of the forms of chronic neuritis. Improvement was observed in cases of sciatica and of brachial and facial neuritis. Two specimen cases are described in detail in which chronic articular rheumatism and sciatica were entirely relieved by means of brine baths plus radioactive emanations, and a relapse in each case was cut short by the internal administration of radioactive water as the sole therapeutic measure. Lowenthal (Berliner klinische Wochenschrift, August 26, 1907; Medical Record, September 28, 1907).

SKIN TUBERCULOSIS, THERAPEUTICS OF.

The writer states that no remedial agent given internally can be depended on to cause the disappearance and perfect cicatrization of tuberculous patches. Codliver-oil internally is more likely to hinder than to accelerate the healing process, but in young persons who can absorb it without digestive disturbances, daily inunctions of from 30 to 60 cubic centimeters, best given after a hot bath and in a warm room, have a definite therapeutic value. Arsenic, if tolerated, and especially in combination with manganese, iron, and bitter tonics, is a valuable adjunct as a roborant. Mercury, in small doses of the green iodide or the bichloride, used with due precaution as in syphilis, is of decided value in dermal tuberculosis. The writer has seen no great results from tuberculin in the past, but is hopeful of such from opsonic treatment. Local treatment, always bearing in mind the necessity of the complete removal of diseased tissues, is essential. The Finsen treatment is the ideal for the deeper forms of lupus, but its drawbacks are such as to preclude its general use. Radiotherapy in the hands of skilled operators has done wonders, but the author has often seen it fail, and twice he has seen it apparently cause epitheliomatous changes calling for serious surgical procedure. It is not a safe agent for any but the skilled to use. There are other methods which, while also demanding skill, depend for their success on observation and patience and require no great outlay of time or money.

Some cases of dermal tuberculosis are so located that ablation is easy and absolutely successful. The essential is the complete removal, and the surgeon must not sacrifice thoroughness for fear of a deforming scar. The author has had good results with ablation, and two cases are reported. The value of curetting also depends on the thoroughness with which it is done. It must be almost brutal to be curative. Formerly he followed it with the cautery, but now thinks this bad practice, as being liable to be followed by keloidal scars. Linear scarification, which formerly had great vogue, but has now fallen into

disuse, is still preferred by the writer in cases in which a scar is particularly objected to and the patient is willing to undergo the repeated inflicting of pain. The cautery method is not recommended in lupus unless the area is very minute and the subject will not allow an excision.

The local remedies are legion. The author speaks favorably of the Biersdorf salicylic acid-creosote treatment and reports a case showing its value. Small nodules can be cured and larger patches treated successfully by the mitigated silver nitrate stick. Lactic acid, while not so successful in skin cases, is his first choice for the treatment of tuberculous nodules on mucous membrane. Silver lactate combines the destructive action of lactic acid and of silver in the treatment of tuberculous ulcerations of the skin and mucous membrane. Antimony and pyrogallic acid are also mentioned as of value in certain cases. The combined treatment consists in preliminary preparation of the field of operation by agents that lay bare the lipoma, and following this up with electro-cautery and curettage or ablation, and subsequent sterilization and chemical cauterization.

In conclusion, the writer describes a method which may be original with him, as he has not heard of others using it. This consists of directing the concentrated sunlight on large surfaces with large lenses of broad focal distance, and with smaller lenses of less focal distance for smaller lesions. The effect sought has been double: first, to obtain the stimulation from a kind of exaggerated sunshine on sluggish granulations; and, second, to obtain the destructive effects following the accurate focusing of the rays on the diseased surface. He makes the applications from five to fifteen minutes, until the congested tissues become yellowish-brown and then opalescent. In twenty-four hours a yellowish crust forms which lasts about a week, then drops off and leaves a non-disfiguring scar. G. MacGowan (Journal of the American Medical Association, August 31, 1907).

STATUS LYMPHATICUS IN INFANTS AND YOUNG CHILDREN.

The writer has had an opportunity during the past eight years to observe more than twenty-five cases of status lymphaticus, many of them clinically as well as post-mortem. The relation of enlargement of the thymus gland with a hyperplastic condition of the lymphoid tissue throughout the body, enlargement of the spleen, Peyer's patches, and the solitary follicles, is indicative of a condition which often terminates in sudden death from apparently inadequate cause. The thymus gland, according to the writer, may be considered distinctly pathologic when it weighs more than ten grams.

The symptoms are manifold. In one class, the condition manifests itself by sudden death, with or without some trifling shock, such as the beginning of anæsthesia or the giving of antitoxin. There are practically no symptoms. Another class presents characteristic symptoms. A sudden illness, possibly vomiting or slight diarrhœa, though digestive symptoms are not prominent. The respiratory symptoms are most marked. Rapid gasping respiration with cyanosis, sometimes incessant cough, the dyspnœa being out of all proportion to the physical signs. Unconsciousness and convulsions often occur. The pulse becomes rapid and feeble, the temperature runs very high—from 104° to 107° F. In yet another class are cases that run a prolonged course, with gradual on-

set. Such cases, even when fully developed, are not distinctive. Again, extreme dyspnœa and cyanosis may occur, without any physical conditions to explain them. In these cases the temperature is usually low—from 100° to 102° F.—convulsions may occur, particularly at the close, death often taking place in the convulsions. In both these classes of cases the writer gives reasons for the conviction that the dyspnœa is not obstructive. There are infrequent cases in which the enlarged thymus causes obstructive dyspnœa; in these cases the drawing up of this gland out of the mediastinum or the removal of the whole or part of it often removes the symptoms. J. Howland (Archives of Pediatrics, August, 1907).

STRABISMUS IN YOUNG CHILDREN, TREATMENT OF.

The development of squint in young children is at first occasional, then it becomes alternating, and later monocular. The propitious time to treat these cases is during its first appearance, when it is only at times that the eye is noticed to converge, either when looking at close objects or when tired, sleepy, or embarrassed. Often the use of atropine for a few days in both eyes will effect a cure. If it does not, the child's eye must be carefully tested for errors of refraction and spectacles must be prescribed at once, which will most assuredly correct the tendency to squint. If the child declines to wear the spectacles prescribed, it is evident the lenses are wrong or the frame is not carefully adjusted.

If the case has gone on to the second stage, and there is a more or less constant alternating squint, almost equally good results will be attained if the error of refraction is corrected. If the squint persists after the spectacles are ordered, it may be necessary to use atropine in both eyes for a few weeks. There are a few cases in which the squint under the use of atropine will be increased for a time; doubtless the child makes increased effort of accommodation in order to overcome the blurred vision, but a continued use of the atropine will overcome this increased convergence. In older children who have a persistent alternating squint, it will be necessary to resort to efforts to train the fusion sense, and this may demand great patience on the part of the surgeon.

The stereoscope and the amblyoscope will aid much. The temporary use of prisms or decentered lenses will help a little. The long-continued use of atropine and avoidance of all close work for the eyes will be of great service. A. R. Baker (Journal of the American Medical Association, July 13, 1907).

SURGICAL SHOCK AND GENERAL ANÆSTHESIA.

Two distinct varieties of surgical shock are met with during general anæsthesia: (1) respiratory and (2) circulatory. In pure respiratory shock the respiration is primarily affected (reflexly), the circulation only failing secondarily. In pure circulatory shock the circulation is primarily affected (reflexly), the respiration only failing secondarily. When respiratory shock becomes complicated by circulatory, or circulatory by respiratory, a state of mixed or composite surgical shock is produced. Respiratory surgical shock, which may occur under all anæsthetics, is most common during light or moderate anæsthesia, *i.e.*, before the corneal reflex has vanished; whilst circulatory shock, which is far more common under chloroform than under other agents, is

met with during profound narcosis. The risk of preparing patients or commencing operations before full anæsthesia has been secured is from the respiratory and not from the circulatory side, as is generally believed.

Respiratory shock may arise during any operation, but it seems specially liable to complicate operations upon the rectum, urethra, abdominal organs, uterus, perineum, and kidney. The immediate cause of the respiratory arrest is usually a reflex spasm affecting either (*a*) the tongue, fauces, palate, and adjacent parts, and having stertor as its possible expression; (b) the larynx, and producing stridor; or (*c*) the respiratory muscles, and bringing about respiratory spasm.

Circulatory shock is chiefly, if not exclusively, met with during operations upon parts which possess important nerves or are rich in nerve supply. The immediate cause of the circulatory phenomena is usually a more or less sudden relaxation or paralysis of the vasomotor system, generally associated with some cardiac inhibition. In some cases the effect produced by the nerve injury is chiefly one of cardiac inhibition.

The most favorable conditions for the occurrence of acute and threatening respiratory shock are: (1) partially established anæsthesia; (2) manipulations or operations upon sensitive parts; and (3) the presence of an airway liable to become occluded.

The most favorable conditions for the occurrence of acute and threatening circulatory shock are (1) deep chloroform anæsthesia; (2) the horizontal, semi-recumbent, or sitting posture; and (3) intestinal, omental, uterine, or renal traction.

Certain subjects, by reason of the conformation of their upper air-passages, seem specially liable to respiratory shock, whilst others, possibly from some abnormal instability of their vasomotor systems, may perhaps be prone to circulatory shock. The state of the heart itself seems to have little or no influence. There may be such a close resemblance between simple chloroform overdosage and circulatory shock under chloroform that the latter condition may be readily mistaken for the former.

Whilst surgical shock may undoubtedly be largely prevented by gentleness on the part of the surgeon, its prevention is also largely in the hands of the anæsthetist. The respiratory variety may usually be avoided by securing full anæsthesia before the patient is moved or the operation is begun, and by so adjusting the degree of anæsthesia that reflex modifications in respiration are as far as possible eliminated. As circulatory shock is very rare under ether, it may be prevented by employing this anæsthetic. Should chloroform or a chloroform mixture be used, there are only two ways in which to prevent circulatory shock during certain operations, viz., (1) to avoid too deep an anæsthesia, or if the patient be deeply anæsthetized, to lessen the depth of anæsthesia so that the corneal reflex returns; or (2) to place the patient in the Trendelenburg posture. With the rarest exceptions, circulatory shock is never seen in the Trendelenburg posture.

The treatment of respiratory shock is to re-establish respiration as quickly as possible by such procedures as separating the clenched teeth, sponging out the fauces, pushing the lower jaw forward, tongue retraction, artificial respiration, and, if need be, laryngotomy and direct lung inflation.

The treatment of circulatory shock in its milder form is simply to lessen the

depth of anæsthesia and to substitute the C. E. mixture or ether for chloroform. In its acute form, circulatory shock must be treated by withholding the anæsthetic, lowering the head, raising the feet, and, should respiration show signs of failure or actually cease, by performing artificial respiration. Unless the patient be so deeply anæsthetized by chloroform as to be in peril from this additional quarter, recovery from circulatory shock may generally be effected very rapidly—within a minute or two—and the operation may then be proceeded with. Drugs are of little or no value as compared to the lines of treatment here indicated. F. W. Hewitt (Lancet, July 27, 1907).

SYPHILIS, INJECTION OF MERCURY IN.

As a result of his observation, the writer holds that the substitution of palmitin, which is a soluble constituent of the organism, as a vehicle for the suspension of mercury, in place of the insoluble substances hitherto in use, and the success which has followed the use of camphorated creosote as an analgesic, begin a new era in the treatment of syphilis by intramuscular injections of insoluble salts of mercury: for, in the first instance, one great objection to the treatment—*i.e.*, the introduction of insoluble foreign bodies into the circulation—is done away with, and in the second, pain has been practically abolished, even in the case of calomel.

Palmitin is a neutral fat derived from palm-oil, having the same chemical composition as the palmitin of the human system. It is an ether glyceride of palmitic acid; it is therefore easily saponified in the fluids of the organism, being converted into a soluble alkaline palmitate and glycerinin; thus it enters into the circulation not as a foreign body like all other substances hitherto used as vehicles. It is nonirritant and nontoxic; it is not so easily oxidized as the other components of human fat; and its melting point can be raised and lowered with the greatest facility. Pure palmitin, which is rather difficult to obtain, is a snowy-white, flocculent powder. The following is the formula for the injection "cream" used by the writer: Mercury, 10 grams (or calomel, 5 grams); equal parts of absolute creosote and camphoric acid, 20 cubic centimeters; palmitin basis to 100 cubic centimeters. Ten minims of the above contain one grain of mercury, or one-half grain of calomel. F. J. Lambkin (Lancet, July 6, 1907).

SYPHILIS, INTRAMUSCULAR MERCURIAL INJECTIONS IN.

From ten years' experience with the method, the writer recommends as a routine treatment in syphilis the intramuscular injection of insoluble mercurials, claiming for it over other methods of administering murcury, a greater rapidity of action, especially in acute cases, more security against relapses, and lessened danger of hereditary transmission of the disease. The patients themselves soon come to prefer the treatment; it is much less trouble to receive an injection at the doctor's office once in ten or fourteen days than to be taking pills or medicine several times a day. It is a lesser tax on their memory and time, and the risk of publicity is less.

The injections, properly administered in the gluteal region, cause very little pain and very slight inconvenience, indurations are exceptional and do no harm; they are indications, other things being equal, for reducing the frequency or the amount of the injections. On

this account the author sometimes prefers to give a 5- or 6- drop injection weekly instead of twice that amount once in two weeks. Abscesses, he declares, are due to faulty technic, and he has found them, even in hospital and dispensary work by internes and assistants, very rare indeed. The danger of pulmonary embolism after the injections is considered by the writer almost illusionary. He always insists on the precaution of disconnecting the syringe and watching the lumen for a few seconds before making the injection, and with this it is difficult to see how it could occur. There is evidence of the entrance of the point of the needle into a vein in about one in twenty-five injections, but this simply entails its withdrawal and reinsertion elsewhere.

Mercurial intoxication may occur, but is less frequent than with the use of mercury in other ways. The author begins with a small dose and progresses up to a full one as the patient's reaction is learned, and it is safe to do so. Having the treatment directly under the control of the physician is a great advantage of the method over other methods of administration of mercurials. W. S. Gottheil (Journal of the American Medical Association, August 3, 1907).

THYROID INSUFFICIENCY.

The writer treats of thyroid insufficiency, especially with reference to nocturnal enuresis in children and adults. It is a little-known fact that women with thyroid insufficiency are subject to profuse hæmorrhages, which follow one another in quick succession and are attributed to a special condition of hæmophilia. They conceive readily and as readily abort. There is undoubted antagonism between thyroid activity and the utero-ovarian functions. The author has often seen women nearing 40 years of age, who are fat and whose menstrual flow is excessive, take thyroid extract in order to reduce their stoutness. He has often seen the menstrual flow in these women become modified, their stoutness decrease, and the women find themselves pregnant, when they had for a long time given up all hope of ever being so again. He has often, by means of thyroid extract, brought to a successful end a pregnancy in women who have repeatedly miscarried. It is often noticed that in adults incontinence of urine can be stopped by rest in bed. This comes about from the fact that, while resting in bed, the patient is subjecting his tissues to large doses of thyroid secretion. In the case of a pregnant woman, the increased thyroid secretion often becomes excessive during the pregnancy, and the woman suffers from the symptoms of excessive thyroid secretion.

Thyroid extract acts as a strong diuretic on the myxœdematous patient. Women with thyroid insufficiency have little or no milk, and this is remedied by the administration of thyroid extract. And it would be just to suppose that the extract passes into the milk, but for the fact that milk from a cow treated with thyroid extract does not alter the flow of water. If the mother has at her disposal sufficient store of thyroid secretion, the child does well; but if there is thyroid insufficiency, and especially if to this fault be added tuberculosis, hereditary syphilis, alcoholism, inanition, saturnism, or diabetes, the child will show undoubted signs of these taints, and will probably be a myxœdematous cretin, with signs of rickets and achondroplasia, and to this cause may be assigned such malformations as hare-lips, cleft palate, bony deformities, hypospadias, or un-

descended testicle. Should the maternal taint be but slight, the child will merely be very backward, which is a matter of small moment in boys, and after a time righted by the thyroid equilibrium being established; but in girls menstruation is late in being established, uterine retroflexion is frequent, the chest is undeveloped. To-day the specific action of the thyroid gland on growth is fully established, both by animal experiments and by clinical observations. The author, in spite of many adverse opinions, now considers that adenoid vegetations are probably due to a thyroid insufficiency.

The actual composition of the thyroid secretion is little known. Bauman has found iodine, Baldi has found bromine, and Gautier has found arsenic in it, and the author thinks that certain cases of thyroid insufficiency can be put down to a lack of one or other of these elements. Essential incontinence of urine is a very common complaint, and it lasts up to 10, 15, or 20 years of age, or even longer. The subjects are always infantile in appearance, small, rachitic, and generally undeveloped. No definite causative lesion is assignable. The only treatment is thyroid extract, and in very persistent doses to this may be added small amounts of iodide or bromide of potassium. Should the patient be apparently cured, only slight cause, such as cold, may set up the incontinence again. Hertoghe (Bull de l'Académie Royale de Méd. Belgique, April 27, 1907; British Medical Journal, July 13, 1907).

TUBERCULIN SUPPOSITORIES.

It is maintained by the author that although the real value of the tuberculin treatment in tuberculosis is still uncertain, its administration by way of suppositories has several advantages and gives the same results as other methods of administration. The suppository is inserted after a movement or after a cleansing rectal irrigation, no aseptic precautions being necessary, while when it is given hypodermically the skin has to be carefully cleansed, and even then there is usually some local reaction. After a suppository has been given, there is no fear of any infection, and a local reaction is rare, and when present manifests itself only by slight burning about the anus or a mild diarrhœa.

The action of tuberculin is more certain when given in suppositories than when given by inhalation or by mouth. The patients on which the writer tried the suppository treatment were usually advanced cases of tuberculosis with a poor prognosis. Koch's "Alt-tuberculin" was used, and, as is the case with most drugs administered by rectum, somewhat larger doses of tuberculin were used than when it was given by mouth or hypodermically; the amounts were usually fractions of a milligram. The drug was given daily, or every few days, or at weekly intervals, depending upon the case. In patients which reacted the usual symptoms which follow the administration set in; their mode of onset, however, was slower and milder, hence suppositories can be safely given in far-advanced cases in which severe sudden reactions are undesirable and in which a propagation of the process would be caused by hypodermic injections of tuberculin.

Hæmoptyses and skin eruptions were noticed several times after the use of suppositories. As a further proof that tuberculin causes a reaction in the lung tissue itself, the writer mentions patients with anthracotic lungs, in whom the sputum, which had been yellow, now

became black, showing that changes were going on in the lung.

As regards the therapeutic value of tuberculin, the author admits that some patients were not benefitted and that others might have gotten well without it, but firmly believes that loss of disagreeable subjective symptoms, an increase in body weight, and an improvement of the local lung condition could at times be attributed to tuberculin alone. Lissauer (Deutsche medizinische Wochenschrift, August 15, 1907; Medical Record, September 21, 1907).

TUBERCULOSIS, ETIOLOGY OF.

The alimentary tract is a frequent portal of entry for the tubercle bacillus, which is able to pass through the intact mucous membrane of this tract without producing a lesion at the point of entrance. This takes place most readily during the digestion of fats. The bacilli pass with the chyle through the lacteals and thoracic duct into the blood, which conveys them to the lungs, where they are retained largely by the filtering action of the tissues. Infection through the alimentary canal is especially frequent in children, milk from tuberculous cows being the source of infection in many cases. Tuberculosis can be communicated by contact, such as kissing, soiled hands, accidental injuries in post-mortem work, or during the cleansing of vessels used by consumptives, etc. These modes of infection play a comparatively small part in the dissemination of the disease. M. P. Ravenel (American Journal of the Medical Sciences, October, 1907).

TUBERCULOSIS, PULMONARY, ROENTGEN RAY IN.

Mental impressions of two kinds are produced by observing these phenomena in a proper manner and may be described as two types: One type is an impression of the moving picture of respiration and its phenomena, or any abnormality connected with them; the other type is the impression produced by abnormal shadows of varying density, implying an inability on the part of the tissue in question to produce normal shadows. On these two types of impressions is based the matter of the recognition of intrathoracic disease by the x-rays. The first of these phenomena is seen in the visual perception of the shadow complex as cast on the fluorescent screen; the second by the permanent record of the Roentgenogram. The writer does not think that the latter method can supplant fluoroscopy, because the diagnostic plate can not show moving structures; it can not enable the operator to increase or lessen at his pleasure the penetrating strength of the Roentgen rays in the course of a single exposure; it can show but one aspect of the patient at a time, and changes of position demand additional exposures. On the other hand, the fluoroscopic screen can not present its image for a permanent record, and the complete image is not so plainly conveyed to the mind of the observer. Further, when subsequent examinations of the same shadow complex are necessary, they cannot be had by the fluoroscope. On these grounds the writer says that both the screen and the Roentgen picture must be accepted, which often enables us to recognize the invasion of pulmonary tuberculosis at an earlier stage than by other measures, such as auscultation and percussion, the tuberculin test, staining fluids, and the microscope, which, however, must not be discarded. P. Brown (Boston Medical and Surgical Journal, September 26, 1907).

TYPHOID FEVER, ABDOMINAL COMPLICATIONS AND SEQUELÆ OF.

The term "abdominal complications," as applied to typhoid, at once suggests to the surgical mind intestinal perforation; but other abdominal crises and complications, perhaps less common, but equally serious, occur. Among these the authors consider acute intussusception, of which eight cases are recorded; volvulus, four cases; rupture of inflamed mesenteric glands, two cases; strangulated Meckel's diverticulum; typhoid pancreatitis; fæcal impaction, and peritonitis without perforation; appendicitis as a forerunner of typhoid, and also appendicitis in typhoid, which are divided into the following groups: (1) a group in which, at the onset of the fever, the cases are erroneously regarded as appendicitis; (2) a group in which an undoubted case of appendicitis, either of the initial or recurrent type, occurs during the course of the fever, merely as a coincidence; (3) a group in which appendicitis is the direct result of the specific inflammation involving the lymphoid tissue, with or without ulceration and perforation; (4) lastly, a group in which appendicitis develops during the convalescence or later, and in which there appears to be some direct or indirect causal relation. C. H. Frazier and B. A. Thomas (University of Pennsylvania Medical Bulletin, July-August, 1907).

TYPHOID FEVER, WIDAL REACTION IN.

Though many of the problems connected with agglutination are still unsolved, they do not affect its value as a test in the diagnosis of typhoid fever. The reaction is clearly given in over 95 per cent. of all well-marked cases of the disease, and whatever its exact proportion may be in cases of typhoid fever in general, there can be no doubt that it is possible, by its help, to diagnose the disease, not only earlier, but with much greater accuracy than was possible before it was known. A negative reaction does not justify a diagnosis that the case is not typhoid, while a positive one almost always means that it is typhoid. But the reaction should never be considered apart from the clinical characters of the case, but only as one, though an important one, of all the factors which must be taken into account in its diagnosis. In a great many cases which give a negative reaction, it is advisable to repeat the test at intervals of two or three days, for, as already mentioned, it is sometimes slow in appearing. If it continues to give a negative reaction, it is at least in the highest degree improbable that the case is one of typhoid fever. In the great majority of cases in which a positive reaction is given, it is all that was needed to make the diagnosis certain, and in cases which are doubtful clinically, their individual history and character will suggest the lines of precaution which should be taken in carrying out the test. A positive reaction will be then conclusive. On the whole, when the test is fairly used, it gives a reliable result in fully 95 per cent. of all cases. R. F. C. Leith (Birmingham Medical Review, August, 1907).

ULCERATIVE PROCTITIS.

Medical treatment alone can be successful only when there are no well-developed ulcers. Even when supplemented by colostomy, a cure is seldom effected except in case of extensive flat ulcerations, but the general condition is much improved. Ulcerative proctitis plus inflammatory stricture of the rectum is generally of syphilitic origin, but

exceptionally may be tuberculous, dysenteric, or gonorrhœal. Experiences with 75 patients emphasize the importance of extirpation of the affected portion of the rectum. Excision of the stricture through a sacral incision is feasible only when the ulcerations are not extensive or deep. Nineteen out of 52 patients, nearly 40 per cent., have been cured for more than a year since operative treatment, and 18 are known to be continent to date. In 24 cases no operation was attempted, the patients either succumbing at once or refusing the advised operation or improving under medical treatment. In the latter group one patient with ulcerative proctitis and gonorrhœal ulcers in the vagina was cured by the actual cautery, insufflation of iodoform and daily rinsing of the rectum with a 1 to 1000 silver nitrate solution. Another patient with ulcerative proctitis and syphilitic stricture improved materially under astringent applications, passage of sounds, and mercurial salve. Other patients with proctitis and colitis, but no ulceration, were cured by rinsing with silver nitrate and tannin. The ulcerations and stricture in other patients with gonorrhœal complications were cauterized with zinc chloride and silver nitrate with great benefit. The last patient in this group was a man with ulcerative proctitis and colitis, no stricture. Treatment included Dover's powder, irrigation with a suspension of bismuth and a solution of silver alternating with another silver preparation. The contemplated operation was postponed on account of the improvement in the course of two months. The irrigations were continued for some time at longer intervals, and the rectal mucosa by the end of the year was soft and apparently normal. The cases were all in Körte's surgical service at Berlin. Twenty-seven of the 75 patients succumbed to some complication soon after their entrance. Of the remaining 58, 29 were dismissed cured, 20 materially improved, and only 8 were not benefited. Recurrence has been observed in 3 cases, and one patient succumbed to insufficiency of the suture after extirpation of the rectum. E. Ruge (Archiv für klinische Chirurgie, Vol. lxxxiii, Nu. 2, 1907; Journal of the American Medical Association, October 12, 1907).

UTERUS, BACKWARD DISPLACEMENTS OF THE.

Many cases of backward displacement are unattended by symptoms and need no treatment. Some are congenital and have symptoms that are not referable to the displacement, namely, dysmenorrhœa and sterility. These call for a different line of treatment. Where enlargement and tenderness of the uterine body exist, and there is a difficulty in immediate replacement, treatment, with a view to reducing congestion, had best be carried out. The same preparatory treatment would apply to those cases in which the ovaries are prolapsed. When well-marked symptoms of neurosis are present, it is advisable to consider carefully how far the local condition is responsible for them. Treatment in these cases is likely to be somewhat of an experiment. When the uterus is bound down by adhesions, persistence of symptoms, in spite of treatment, will justify an operation for the freeing of adhesions and fixation forward of the uterus.

Ventral and other methods of fixation of the uterus are called for in a small minority of cases of backward displacement. Owing to the risks involved in the operation itself, and from subse-

quent pregnancy, it should be undertaken only when other measures of relief have failed. G. Bellingham Smith (Practitioner, August, 1907).

VACCINE THERAPY, PRINCIPLES OF.

The only methods, other than vaccine therapy, which we have to-day at disposal for the treatment of bacterial diseases are: (1) treatment by chemical antiseptics; (2) treatment by the extirpation of the obtrusive focus of infection; (3) treatment by the determination of lymph to the focus of infection; (4) serotherapy; and (5) expectant treatment.

Two elements come into consideration in the protection of the organism against invading microörganisms: the leucocytes, with their digestive ferments, constitute one of these elements; the antibacterial substances in the blood-fluids constitute the other, the bactericidins, the bacteriolysins, the agglutinins, and, the most important, the opsonins. To the opsonins may be ascribed a predominating importance, first, because it can be shown that the opsonic effect is exerted by either the normal or immune blood on every species of bacteria, whereas the agglutinating effect is exerted only on special varieties of bacteria, and the bactericidal and bacteriolytic effects are exerted among pathogenic microörganisms apparently only on the typhoid bacillus and the cholera vibrio. The opsonins derive further practical importance from the fact that they can be accurately measured (the error of estimation in the case of normal blood and in the hands of a good worker being rarely greater than plus or minus 5 per cent.) and that it is possible, seeing that the opsonic effect of the normal blood-fluids is very marked, to register not only (as in the case of the agglutinating power) an increase but also a reduction in the opsonic power of the blood. Such increase and reduction in the opsonic power is, of course, measured by comparing the amount of purely induced phagocytosis which is obtained with a normal blood, with the amount of purely induced phagocytosis which is obtained with the blood of the patient under examination. The success of an immunization process must depend, in the first place, on the power of immunizing response which the organism may happen to possess with respect to the particular bacterial infection or intoxication process which is in question, and, in the second place, on the composition of the vaccine and the dosage and method of administration.

The writer treats the subject of autoinoculation and shows that it is a method by which Nature achieves curative effects in bacterial infections. Sir A. E. Wright (Journal of the American Medical Association, August 17, 1907).

VALVULAR DISEASE, PREVENTION OF.

In acute rheumatism the inflammatory changes in the joint tissues and the endocardium respectively are like in kind, but the essential treatment of rest is not equally possible of application. The work of the heart varies with times and circumstances, however, so that within limits the amount can be regulated, if sufficient trouble is taken. Pain and fever can be lessened by adequate doses of some salicyl compound or other measure appropriate to the condition. Absolute rest of body and mind, light diet, a gentle sedative in sleeplessness, fairly full doses of sodium or potassium iodide three or four times daily, to aid absorption, lessen the volume of the blood and diminish blood-pressure. These measures slow the heart and diminish its

amount of work. Secondly, through the first four dorsal nerves, in their distribution between the clavicle and the nipple, the trophic and vasomotor nerves of the heart can be stimulated without exciting the muscle fibers. This is effected by small blisters, applied one by one. The rest treatment is the most important and must continue for six or eight weeks, or even longer, and it must begin early, before marked structural changes occur. This depends on a capacity to recognize the advancing stages of valvular disease in the making. The normal first sound at the apex consists of two elements: (1) The less important muscle sound; (2) the crack of the stretched valve ducts made taut by the sudden high pressure of the blood-stream under the powerful squeeze of the ventricle. Thickening and stiffening of the valve membrane from inflammatory change with subendothelial effusion, and the formation of vegetations, gradually change the clear sound into a longer and duller one, eventuating in a whiffing sound that ultimately develops into a real regurgitant bruit. R. Caton (British Medical Journal, August 10, 1907).

WANDERING SPLEEN.

Rotation of an organ or tumor with twisting of its pedicle may be due to intrinsic or extrinsic causes, depending upon the size, the nature, and situation of the same. Both these causes may be factors in the rotation of an organ. A sine qua non for displacement or rotation of an hypertrophied spleen is relaxation or rupture of its supporting ligaments. Every intraperitoneal wandering organ or growth should be operated on in order to avoid the serious consequences of ileus or of torsion of its pedicle. Removal of a wandering spleen, in view of the low mortality, may be classed as a justifiable operation, when threatening symptoms arise. M. S. Kakels (New York Medical Journal, October 5, 1907).

Book Reviews

A MANUAL OF PERSONAL HYGIENE: Proper Living upon a Physiologic Basis. By Eminent Specialists. Edited by Walter L. Pyle, M.D. Third Revised Edition. 12mo of 451 Pages. Illustrated. Cloth, $1.50, net. W. B. Saunders Company, Philadelphia and London, 1907.

This well-known work of W. L. Pyle, with the coöperation of seven other well-known authorities on various departments of medicine, appears in its third edition. This edition exhibits several new features, all needed. It is not too large a book. The style is concise and clear; the subject of such great importance that most busy practitioners endorse it but give it the go-by. The reviewer speaks with some authority, having written much on similar lines, and has ceased to be astonished at the ignorance displayed by some of the best in discussion. A rapidly increasing interest is being displayed, and knowledge gained through just such good books as this.—J. M. T.

ATLAS AND EPITOME OF DISEASES OF CHILDREN. By Dr. R. Hecker and Dr. J. Trumpp, of Munich. Edited, with Additions, by Isaac A. Abt, M.D., Assistant Professor of the Diseases of Children in Rush Medical College, Chicago. With 48 Colored Plates, 147 Black and White Illustrations, and 453 Pages of Text. Cloth, $5.00, net. W. B. Saunders Company, Philadelphia and London.

Saunders is sustaining the high reputation already achieved for his medical hand atlases in this one on the diseases of children. Little more need be said than that it is unique, fairly complete, and most necessary for the clinician. The illustrations are superb; it is difficult to see how some of them could be much better. The education of the eye is recognized to be essential, as well of the mind and touch. No one can fail to learn something from a study of the book before us. The reviewer was, himself, for several years active in making such illustrations, and he gladly testifies to the high-class work both of the artist and in reproduction, which last is so often disheartenigly bad after the first has done his uttermost.—J. M. T.

THE CANADIAN JOURNAL OF MEDICINE AND SURGERY (Toronto) has issued a special number for September to meet the needs of the National Medical Association.

The original contributions are excellent, of varied character, practical and scientific; but the noticeable feature is the beautiful illustrations of Canadian scenery and interesting buildings. Dr. W. A. Young, the managing editor, is one of our most active members of the American Medical Editors' Association, and his geniality and energies go far toward sustaining the strong bonds of commercial interests which cement our two adjacent countries.—J. M. T.

A MANUAL OF DISEASES OF THE NOSE, THROAT, AND EAR. By E. Baldwin Gleason, M.D., Clinical Professor of Otology at the Medico-Chirurgical College, Philadelphia. 12mo of 556 Pages, Profusely Illustrated. Flexible leather, $2.50, net. W. B. Saunders Company, Philadelphia and London, 1907.

In the publication of this Manual of Diseases of the Nose, Throat, and Ear for the benefit of students and general practitioners, the author has made an effort to present the subject matter in as concise a form as possible. Throughout the entire work the illustrations are numerous, well chosen, and clearly described. Anatomy, physiology, and pathology do not seem to play an important part in the text, but due attention is given to the necessary points in these branches when necessary.

The early pages are taken up with the discussion of equipment, the description of instruments, and the indications for their application. The examination of the patient is duly considered, and under this heading is appended a copy of Dr. F. Rohrer's ("Zurick") Diagnostic Table for Diseases of the Ear. The discussion of the diseases of the accessory sinuses, with the accompanying illustrations of the different cavities, is worthy of note. The author seems to lay special stress upon the management of cases of diphtheria, and points out clearly the indications for intubation and tracheotomy. In the chapter on diseases of the ear, the writer continues to show the result of his large clinical experience by giving ample attention to "every-day" conditions. His descriptions do not leave the physician in doubt as to the best course to pursue in the treatment of acute cases. Mastoid operations are carefully described, for a manual, and the dangers in such procedures are clearly pointed out. At the end of the book are 160 formulas, which are divided into groups according to their actions, and which the physician will find of considerable benefit.—R. B. S.

FIVE HUNDRED SURGICAL SUGGESTIONS: Practical Brevities in Diagnosis and Treatment. By Walter M. Brickner, B.S., M.D., Chief of Surgical Department, Mount Sinai Hospital Dispensary; Editor-in-Chief American Journal of Surgery, New York; and Eli Moschcowitz, A.B., M.D., Assistant Physician, Mount Sinai Hospital Dispensary; Assistant Editor American Journal of Surgery, New York. Second Series. Surgery Publishing Company, 92 William Street, New York, U. S. A., 1907.

The mere fact that the first edition of this book was soon exhausted, and the demand continued to be so great that a second edition was necessary within a year, should commend this small work to the medical profession. The number of suggestions has been increased to about double the original number, and in the present edition reaches 500. So practical and instructive are many of these suggestions that we would not hesitate to recommend this small volume even to the experienced surgeon.—R. B. S.

DIAGNOSTICS OF DISEASES OF CHILDREN. By LeGrand Kerr, M.D., Professor of Diseases of Children at the Brooklyn Post-Graduate Medical School. Octavo of 524 Pages, Illustrated. Cloth, $5.00, net; Half-morocco, $6.50, net. W. B. Saunders Company, Philadelphia and London, 1907.

A book dealing alone with diagnosis of disease in children is rather a narrow specialization. So large has the subject of pediatrics become, however, that it is needed. It was the ambition of the reviewer once to prepare such a book.

The one before us is admirable in many particulars, especially the arrangement. It deals frankly with phenomena and their interpretation, throughout four-fifths of the space. This is as it should be, to educate the clinician in observation and deduction. The admirable work of N. Filatov deals with phenomena as elucidating disorders of the various organs and in classified diseases, not so conspicuously different from many excellent text-books of pediatrics, giving, however, extreme prominence to the semeiology and diagnosis. Both methods are valuable, but we are inclined to give the preference to that of LeGrand Kerr. It is well done. The degree of labor involved in devising and perfecting the system of presentation deserves appreciation. No one who has not made a similar attempt, in the absence of precedents, can realize the difficulties met and overcome. One point comes in for criticism, not the responsibility of the author, but the publisher. It is too big and heavy—a common fault.—J. M. T.

MODERN PHYSIO-THERAPY. A System of Drugless Therapeutic Measures. By Otto Juettner, A.M., Sc.M., M.D., M.E., Ph.D., Prof. Practice, Cincinnati Post-Graduate School of Physiological Therapeutics, etc. 503 Pages. Harvey Publishing Co., Cincinnati, Ohio.

This is a good book, well conceived and ably performed. The author is an enthusiast in the use of those auxiliary measures other than drugs, which are now being called "physiologic." The name is by no means exact, because we are now learning more precisely that we can interpret definitely the action of all remedies, and among these drugs will always hold high place. And because it is not possible to get along without them, yet do justice to many exigencies as to promptness and thoroughness, we will soon achieve exactitude with these, thanks to such radical aid as Sajous's researches provide.

The author of the book before us admits the difficulty in applying many of the more essential measures in the absence of hospital opportunities; further, that the field of usefulness is greater for chronic than for acute. There can be no doubt of the vast utility of these auxiliary measures, especially where they embrace all needed agencies, including dietetics and suggestion. It is unfortunate that so large a proportion of the measures described (and very well and concisely described, they are) involve the use of cumbersome appliances, hence are not readily utilizable by general practitioners in remote localities. It is desirable, however, that these shall become familiar with the possibilities and the manner of their application, so that they may know when to seek aid of those who can furnish this form of aid. Much can be done with the human hand, and the chapter on mechanotherapy might well be elaborated.—J. M. T.

Books and Monographs Received

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"Third Annual Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis." February 1, 1905, to February 1, 1906.——"Thirty-third Annual Report of the Secretary of the State Board of Health of the State of Michigan for the Fiscal Year Ending June 30, 1905."——"The Status Medicus: A Statement and a Proposition." By James Krauss, Boston, Mass. 1907.——"Chronic Intestinal Auto-Intoxication." By F. Forchheimer, Cincinnati, Ohio. 1907.——"Hysterical Mutism." By G. Hudson-Makuen, Philadelphia. 1906.——"The Oral Cavity as a Factor in the Development of Speech." By G. Hudson-Makuen, Philadelphia. 1907.——"Operations for Cleft Palate

and their Results; Especially in Respect to the Improvement of Speech." By G. Hudson-Makuen, Philadelphia. 1907.——"The Medical Man Afloat." By H. Sheridan Baketel, New York. 1907.——"The Emergency Dilatation of Urethral Stricture." By F. C. Valentine and T. M. Townsend, New York. 1907.——"Urethral Hæmorrhage." By F. C. Valentine and T. M. Townsend, New York. 1907.——"Massage of the Prostate and Stripping the Seminal Vesicles." By F. C. Valentine and T. M. Townsend, New York. 1907.——"Education in Sexual Subjects." By F. C. Valentine, New York. 1906.——"Urethral Dilatations with Expansible Instruments." By F. C. Valentine and T. M. Townsend, New York. 1896.——"The Venereal Peril in Its Relation to the State." By F. C. Valentine, New York. 1906.——"The Contamination of the Air of Our Cities with Sulphur Dioxid, the Cause of Respiratory Disease." By T. W. Schaefer, 1907.

From the United States Department of Agriculture: "Game Laws for 1907. A Summary of the Provisions Relating to Seasons, Shipment, Sale, and Licenses." By T. S. Palmer, Henry Oldys, and Chas. E. Brewster. 1907.——"Exports and Imports of Forest Products: 1906." By R. S. Kellogg. 1907.——"Chemical Methods for Utilizing Wood, Including Destructive Distillation, Recovery of Turpentine, Rosin, and Pulp, and the Preparation of Alcohols and Oxalic Acid." By F. P. Veitch. 1907.

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Original Articles

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FRACTURES OF THE ELBOW IN CHILDREN.[1]

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THIS subject has always been one of intense interest to me, and in the preparation of this paper I have not been prompted by the discovery of any new ideas in the mode of treatment, but simply by the desire to encourage an open discussion of, and to refresh our minds on, a subject of which we ought to have a clear conception.

During one or two services in the children's surgical clinic at the Presbyterian Hospital, the writer was impressed with the comparatively numerous cases of fracture around the elbow in young subjects. Scudder, in his book, tells us that fractures of the lower end of the humerus, near to and involving the joint, are frequent in childhood. The examination of these cases is often very unsatisfactory, even to those who have become quite skilled in the diagnosis of fractures of the elbow, owing to the marked swelling, the intense pain, and the great fear of the patient. When the least doubt exists as to the true diagnosis, the physician-in-charge is justified in advising the administration of an anæsthetic; in fact, some authorities state that all fractures, or suspected ones, should be thoroughly examined under anæsthesia. Reduction can then be easily made, and the appropriate dressings applied to better advantage.

In a recent manual on medical diagnosis by Charles Lyman Greene, the routine examination of all cases is strongly advocated. So, here, also, too much

[1] Read before the West Philadelphia Branch of the Philadelphia County Medical Society, October 11, 1907.

emphasis cannot be placed upon a systematic and careful examination of all injuries of the elbow, and in many cases, in order to arrive at the correct diagnosis, an anæsthetic will probably be necessary. The attitude of the patient should be taken into consideration; the points of swelling and ecchymosis should be noted, whether local or general; the point of maximum tenderness or pain should be inquired for; and the carrying angle should be observed. (It is well to bear in mind that the absence of the carrying angle does not necessarily indicate the presence of a fracture, for, according to Scudder, some individuals are without this accommodation.) The normal anatomical points should also be determined, and marked for the sake of accuracy in measurements; the relation of the three bony points should be noted during flexion and extension; and the presence of any abnormal mobility in the joint should be accounted for. Comparative measurements should always be made. If crepitus is elicited, the diagnosis is certain, but one must not be deceived by the presence of joint crepitus, but must be certain that the sensation is imparted by the contact of the two fragments. The x-ray will usually clear all doubt.

For the sake of simplicity, and in order to study these injuries without confusion, suppose we make the following classification: fractures above the condyles, fractures between the condyles, fractures of either condyle, fractures of either epicondyle (although DaCosta states that the outer one is never fractured alone), separation of the epiphysis, fractures of the head and neck of the radius, and fractures of the olecranon process.

In fractures above the condyles, or supracondyloid fractures, the location of the injury is above the epiphysis. With the usual symptoms of all fractures of pain, swelling, and loss of function, we have abnormal mobility, crepitus, and deformity. The latter is produced by the upper fragment being displaced forward, and the lower fragment backward with the forearm. The normal position of the three bony points will distinguish this injury from backward dislocation of the bones of the forearm, in which condition the deformity is similar.

Fractures between the condyles, "T" fractures, or intercondyloid fractures may be the result of even a slight injury. Crepitus can be easily detected, the transverse measurement of the condyles will be increased, and there will be abnormal mobility both in adduction and abduction.

In fractures of the external condyle, the swelling over this point will be marked, crepitus and abnormal mobility will be decided, the normal relation of the three bony points will be disturbed, the displacement of the fragment will be slight, and its relation to the head of the radius will probably not be disturbed, owing to the firm attachment of the capsule and the lateral ligament. The transverse measurement of the condyles will be increased on the injured

side, and supination will be somewhat limited. While this fracture is more common than that of the internal condyle, Stimson states that the loss of function is not so great.

When fractures of the internal condyle take place, the pain and swelling are more or less marked over this prominence, mobility is present, crepitus can be detected, the inner of the three bony points appears displaced upward, and we have what is known as the "gun-stock" deformity, or cubitus varus. While this deformity is thought to be due to the slipping up of the internal condyle, Stimson says that "the almost total absence of such specimens, the possession of others showing descent of the external condyle, and the findings in several operations undertaken to correct this deformity have convinced him that, when marked, it is habitually the result of complete or partial supracondyloid fracture followed by this deformity, and that this is practically the only form of fracture after which it is at all likely to occur to any extent."

In fractures of the internal epicondyle, if the fragment is small, it is of little consequence, as the muscular attachments hold the fragment against the adjoining bone; but if the fragment is large enough to include the greater part of the attachments, there is a displacement downward and forward. In some rare cases the ulnar nerve is implicated in this injury.

The symptoms of epiphyseal separation of the lower end of the humerus are practically those of supracondyloid fracture.

In the majority of the prominent text-books, we read that fractures of the head and neck of the radius are uncommon, but in the Pennsylvania Medical Journal of April, 1906, T. Turner Thomas informs us that this fracture is not as infrequent as it was at first thought to be, and even claims that it is a common injury. In the search through the plates of four skiagraphers in Philadelphia, he was able to collect 55 cases, while after a careful search through the literature he was able to find records of only 48 cases. Of the latter number only 8 were diagnosed during life, and in each case by one symptom, *i.e.*, crepitus. As the result of his investigations, Thomas claims that crepitus is not always present, and therefore cannot be relied upon, but that the diagnostic features are swelling, more or less marked about the head of the radius; limitations of all movements of the elbow, especially pronation and supination; severe pain and tenderness, localized to the head of the radius; and the history of the fall upon the hand.

Fractures of the olecranon process are not difficult of diagnosis. The history of the fall upon the elbow, the inability to extend the forearm, pain, swelling and abnormal mobility will give one a clue to the nature of the injury. The degree of deformity produced will depend upon the extent of laceration

of the tendino-aponeurotic attachments and ligaments. Crepitus, as in fractures of the patella, will depend upon the absence of clot and shreds of tissue between the fragments.

In the treatment of fractures of the elbow, the writer's own limited experience leads him at times to vary somewhat from the hard-and-fast rules as laid down by some authorities. While the consensus of opinion seems to be to treat all fractures in this neighborhood, with the exception of those of the olecranon, in the acutely flexed position, a number of cases have been under observation, mainly supracondyloid fractures, where the fragments have been kept in better position by an anterior right-angular splint.

For supracondyloid fractures, the American Text-book of Surgery advises the right-angle position or even full extension, while H. L. Smith, in the International Text-book of Surgery, advocates acute flexion, claiming that the fragments are held more firmly in place, being locked between the coronoid process in front and the ligamentous and musculo-tendinous structures behind. He also states that in case of ankylosis, which is often very likely, the arm will be more useful in the acutely flexed position. And then, again, such a prominent authority as Stimson recommends the right-angle position, or, if there is much displacement, surgical interference.

In the treatment of "T" fractures, one will find various dressings used. In an article published in the American Journal of the Medical Sciences, March, 1907, Vaughan cites the case of a boy 17 years old, in which he inserted a steel drill through the skin, the external condyle, and far enough into the internal condyle to hold fast. The external condyle and the lower end of the upper fragment were then wired after drilling a hole in each. The drill was removed on the seventeenth day and a good result reported. Scudder advises in all fractures of the epicondyle, "T" fractures into the joint, and fractures of the condyles a right-angular splint during the stage of marked swelling, and then the acutely flexed position.

For fractures of the olecranon, Vaughan claims, in the same article mentioned above, that it is generally agreed that for fractures of the patella and the olecranon, the operative treatment is the best. He states that all fractures of this process do not need operation, the interference depending upon the separation of the fragments; but when indicated, he advocates the open method, the cleaning out of the joint, and the use of kangaroo tendon or wire to approximate the fragments. The arm is then dressed in the right-angle position, in contrast to the position of full extension which is probably most commonly used.

In the Journal of the American Medical Association, January 27, 1906, Murphy reports the case of a man in which he did an extra-articular operation.

He made two small incisions, one-third of an inch long, on either side of the ulna and two more on either side of the triceps tendon. He perforated the base of the olecranon process, inserted a small wire, and passed it through the perforation to the inner side of the arm. The wire was then passed up under the skin and out of the incision above. It was then re-inserted, passed through the triceps tendon, and out of the corresponding incision on the opposite side. It was again re-inserted, passed down under the skin, brought out at the point of starting, and the ends of the wire were then twisted sufficiently to insure proper coaptation of the fragments. Passive motion was started immediately. In the late edition of DaCosta's Surgery, the author advises keeping these cases in bed. At the end of three weeks he says to anæsthetize the patient, press the thumb firmly over the olecranon process, place the forearm at right angles to the arm, and apply an anterior angular splint, to be worn for two weeks. Passive motion is to be practiced every other day after the angular splint has been applied.

While many of the early text-books do not outline any definite treatment for fractures of the head and neck of the radius, Cheyne, in the British Medical Journal of March 7, 1891, advises the excision of the detached fragment. Stimson has excised the head of the radius in most of his cases. In Brewer's Text-book of Surgery, 1903, he says: "In these cases the treatment should be open incision, thorough inspection, and the removal of any fragments of bone. Excision of the head may be necessary if there is much comminution." In the third volume of von Bergmann's Surgery, edited by Bull, are found these words: "Fixation for two weeks in any of the ordinary splints suffices for this fracture."

In all fractures of the elbow, whatever position the arm is placed in, it should be inspected frequently, the radial pulse noted, and the swelling carefully observed. All apparatus should be removed at least once a week, and while passive motion should not be instituted until late, massage may be started after the primary swelling has subsided.

THE RELATION OF PHYSICAL TO MENTAL DEFECTS IN SCHOOL-CHILDREN.

By WALTER S. CORNELL, M.D.

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The age of our race between 6 and 15 years is a distinctive one, from the fact that the problem of diet, so important in infancy, decreases with the corresponding increase in bodily activity. So, also, the prevalence and

effect of contagious disease suffer a reduction. For these reasons the mortality rate decreases progressively, and the probability of survival becomes steadily brighter.

The age of development, however, is one in which the subsequent physical and mental welfare is largely predetermined. Though the child's life be fairly safe, his fortune still lies largely in the hands of his parents, his environment, his teacher, and his physician. First must be met the burdens of heredity, producing thousands of sickly, deformed, and neurotic children. A perpetually (or rather, life-long) acting force is here to be combatted and reckoned with. Second to heredity is a poor city environment, with its lack of fresh air and improper diet of canned foods. Against these influences healthy infants succumb, and join the ranks of those already suffering from rickets, anæmia, and adenoid nasal obstruction. Finally, ignorance of the parents causes indifference to the damage already done, and adds premature decay of the teeth to the existing list of evident physical inperfections.

Are these injuries to the health of the child also harmful to his mind? Will he ultimately pass through their pale of influence more or less scarred, but possessing the same knowledge and mental faculty that make for power, as his more vigorous neighbor?

The physical basis of mental defect becomes more and more evident as our psychopathic investigations increase in accuracy.

Among the imbecile and idiotic class in children, the agencies producing the mental condition, such as cerebral hæmorrhage and paralysis, or hydrocephalus, are very apparent to any observer.

Feeble-minded children, the result of vicious, drunken, or imbecilic ancestry, show physical defects less evident to gross observation, but demonstrable, nevertheless, by superficial examination, by autopsy, and by subsequent brain examination.

Backward and subnormal children approach so nearly the ordinary child that the connection between physical defect and brain defect is often not demonstrable at all in individual cases. In these the acting influences are of minor degree, being principally poor eyesight, deafness, and poor nutrition (adenoid growths are included in the latter two). We may either assume that the rule of a sound mind in a sound body is a natural law, and so reason by analogy that it operates in these cases, or by a study of a large series of cases draw positive original conclusions from this very class itself. The latter is well worth proving, if it be possible to do so.

That the mentally defective show physical defect is overwhelmingly proven by the statistics of asylums and training schools. Even in the special

classes for backward children conducted by our large cities, the reports show that almost every backward child shows physical defect of some sort. In these classes the proportion of such children is given by one authority as 95 per cent. of the whole number.

That the physically defective among ordinary school-children show sub-normal mentality is the converse of the last proposition and should be capable of demonstration.

In the following investigation I have endeavored to clearly establish this relationship. The children studied were those of three Philadelphia public schools who had previously been physically examined by myself in conjunction with the official work of medical school inspections.

The first step was the recording, in each school, of the name, physical record, and scholarship of each child. The latter was obtained by using the previous term-marks in three of the school studies, from which an average mark was easily calculated.

The average term-mark for the whole school was first obtained by the simple process of adding the term-marks of all the children together, and dividing by the number of children. For instance, in the Claghorn School this was 73.1.

The record-cards of the children were then divided into two collections: one of the healthy or normal children, the other of the general group showing some noteworthy physical defect. The average term-mark (the scholarship index) was then calculated for each group separately, and the two compared with each other and with the term-mark of all the children first calculated.

The results showed that in each school, *and in each individual branch of study in each school,* the healthy or normal children stood higher in their classes than the average children, and the physically defectives, taken as a class, stood lower than the average children.

ALLISON SCHOOL—219 CHILDREN, BOTH SEXES, 6 TO 12 YEARS OLD.

	Average.
Normal child	75
Average child	74
General defectives	72.6
Adenoids and enlarged tonsils	72
Deaf	67.2

NINTH STREET PRIMARY SCHOOL—84 CHILDREN, BOTH SEXES, 6 TO 10 YEARS OLD.

	Language.	Arithmetic.	Spelling.	Average.
63 cases normal children	72.9	75.5	75.4	74.6
84 cases average child	70.5	74	72.8	72.4
21 cases general defectives	63.3	70	64.8	66
8 cases adenoids	60	66.7	65	63.9

No cases deaf.

CLAGHORN SCHOOL—252 CHILDREN, BOTH SEXES, 12 TO 15 YEARS OLD.

	Language.	Arithmetic.	Geography and History.	Average.
179 cases normal children	74.4	72	76.6	74.3
252 cases average child	72.7	70	76.5	73.1
73 cases general defectives	71.4	65.1	76.2	70.8

An investigation on slightly different lines was afforded by the existence in the Claghorn School of four classes of the same grammer grade, which had been so made up at the beginning of the year that the brighter children constituted two classes, and the duller children the other two classes. The latter were smaller, so as to give more individual instruction. A comparison of the physical condition of the children is interesting and instructive:—

	Class 1. Bright Children.	Class 15.	Class 9. Dull Children.	Class 11. Dullest Children.
Number of children	50	39	32	29
Proportion of normal to defective children:—				
Normal	36	32	20	13
Defective	14	7	12	16
Percentage of normal children,..	72 per cent.	82 per cent.	62.5 per cent.	44.8 per cent.

A separate study was made to show the single influence of poor eyesight on the scholarship of the children (New York Medical Journal, June 1, 1907). The records of the Allison School were used. A series list was made of 219 children, their visual acuity, and their term-marks in arithmetic, geography, and spelling. For convenience vision was designated as normal, if it exceeded three-fourths, fair if it exceeded one-half, and bad if it was one-half or less. The children were first grouped according to their acuity of vision with the following result:—

	Arithmetic.	Geography.	Spelling.	Average.
Normal vision	79	69	76	75—
Fair vision	70	71	77	73+
Bad vision	66	70	71	69

This difference of six points is often the difference between promotion and failure in a child's work. It is interesting also to note the great difference in the arithmetic marking and the slight difference in the geography marking, the latter being acquired largely by oral instruction rather than blackboard work.

An effort was made to determine the exact degree of influence of defect of the nose and throat. The harmful results of these are well recognized in late years. In the Claghorn School the four classes of bright and dull children were examined again. Their eyesight proved to be about the same (averaging $\frac{5:2}{6}\frac{6}{}$, $\frac{5:4}{6}\frac{1}{}$, $\frac{5:3}{6}$, $\frac{5:0}{6}\frac{8}{}$). Enlarged tonsils, adenoids, deafness, and

nasal catarrh occurred much more frequently, however, among the two classes of duller children. In many the adenoid expression was written only too plainly on their faces. The following table shows the findings:—

	Class 1. Bright Children.	Class 15. Dull Children.	Class 9. Dullest Children.	Class 11.
Number of children	50	39	32	29
Nose and throat conditions:—				
Number defective	6	4	9	9
With single or combined defects, viz.:—				
Tonsils	3	4	3	3
Adenoids	2	1	5	6
Deaf	2	—	5	1
Catarrh	—	—	2	3
Percentage of children with nose and throat defects....	12 per cent.	10.2 per cent.	28.1 per cent.	31 per cent.

The conclusions to be drawn from the foregoing facts are very apparent. The educational result in our public schools suffers a discount of about 6 per cent. in the case of the physically defective children, which only the medical profession can remedy. Add to this the waste of the time really belonging to normal children and the drain on the teacher's energies, and the general attitude of the family physician becomes of still more importance. In many cases he not only guards the health of his charges, but by his alertness or indifference determines their scholastic career and subsequent life's work. I have said that the child's fortune lies largely in the hands of his parents, his environment, his teacher, and his physician. It is the responsibility of the medical profession that here is emphasized.

VASOMOTOR REGULATION IN THERAPEUTICS.[1]

By J. MADISON TAYLOR, A.M., M.D.

Whatever basis we use in classifying diseases, we will do well to bear in mind that all repair is conditional upon the amount and quality of blood distributed. This, again, depends on the integrity, the functional competency of the vasomotor mechanisms. Whatever remedial agents we employ become efficacious in proportion to the degree and proportion of blood-distribution.

A preponderance of remedial measures and of drugs is directed to the regulation of the circulation; hence of the cellular nutrition, adjustment, oxygenation, and tissue respiration. Whatever fluctuations occur in the fashions of drugs, the burden of cure is laid, one way or another, upon their capacity

[1] Read before the American Climatological Society, Washington, D. C., May 4, 1907.

to regulate the ebb and flow of the bodily fluids. The same may be said of hygienic, "physiologic," dietetic, and other so-called auxilliary measures. Drug nihilism arises chiefly because of confusion induced by diversity in teachings, due to inexact knowledge of fundamentals. When our pharmacology is simplified and systematized by a clear conception of the principles underlying the regulative mechanisms, the ductless glands, the adrenal system (which dominates all organic processes), we shall be in a position to apply remedial measures with some exactitude.

It is the purpose of this article to show the practical value and applicability of such measures as most immediately exert control over the vasomotor factor. Much remains to be learned, and the subject will be opened again.

Vasomotor variations, or alterations, are being used more constantly to explain a large number of derangements. Many of these interpretations, even by the acutest observers, are often vague, ill-defined, or inferential. It is plain that the processes of nutrition and repair depend chiefly upon a plus or minus supply of oxygen. Hence it is essential, for cellular integrity, to secure maintenance of that degree of "tissue respiration," as physiologists are wont to describe the essential life-process, which is compatible with health. It simplifies our conception of physio-pathogeny to keep in mind all, or at least the most potential factors which combine to distribute the "pabulum vitæ." While life proceeds many factors obtrude, inducing cellular death. Toxins are perpetually being formed, diverse toxics assail; the organism is constantly called upon to adjust itself to meet the onslaughts of destructive agencies. While variations in vascular tonus are not alone indications of danger to health (depending, as they do, upon the amounts and qualities of toxins circulating), nevertheless we must see to it that those entrusted to our keeping are at least maintained in a suitable vascular equilibrium.

There is another important factor, hitherto not generally appreciated, which it has been the privilege of Sajous to elucidate by elaborate researches, viz.: the identity of the force which regulates circulation. This power, he has shown, resides in the adrenal secretion, which is not only the key to tissue respiration, but also to the action of all other organs commonly classed as the "ductless glands." He has made clear that what he designates as the adrenal system (composed of the adrenals, the thyroid gland, and the pituitary body) constitutes a regulative entity, a paramount factor, which dominates the subsidiary organs, viz.: the heart, lungs, liver, kidneys, etc., whose destiny is to fulfill the mandates of this controlling agency. It is the especial function of the regulative entities to conserve and enhance the auto-protective forces. He has shown in his first volume of the "Internal Secretions," and demonstrated

more comprehensively and directly in the second, that by our application of his discoveries and conclusions, we shall be able to grasp the significance of these self-preservative potentialities and utilize them in all clinical problems. The blood-plasma is demonstrated to be the main agent in the distribution of oxygen. This penetrates to the ultimate cells as nothing else can do. The reader is referred to these volumes for details. It will be sufficient here to assume the truth of the assertion and proceed to inquire into the practical bearings of the subject under discussion.

Sajous, in his second volume, has systematically presented his conception of the action of drugs upon the principle of the effects they exert in enhancing or depressing the action of the adrenals, hence the various factors in circulation, not neglecting other manifold collateral effects. For example, take his explanation of the action of digitalis. He says (MONTHLY CYCLOPÆDIA, Vol. vii, p. 281, 1904):—

"The increased power of the cardiac contraction should be attributed mainly to a direct action of the secretion of the adrenals on the heart-muscle" . . . . which "reaches the heart in the blood of the inferior vena cava; penetrates the myocardium by way of the Thebesian foramina, and in that way plays a leading part in cardiac contraction."

He shows the intimate nervous connection between the pituitary body and the adrenals, and that the functional hyperactivity of the latter stimulates the former, which is the governing center. Digitalis, by activating the adrenals via the center, the "test organ," correspondingly augments the quantity of adrenoxidase in the blood, and hence the functional activity of all organs. "In doing this it enhances their nutrition, including that of the heart-muscle." It is interesting here to cite the long personal experience of Henry Beates, the distinguished president of the State Board of Medicine Examiners of Pennsylvania (Journal of the American Medical Association, June 26, 1897)—with which my own is in accord—who asserts that digitalin (Merck's Germanic) in full doses, "in all lesions of the heart, with the single exception of initial regurgitation complicated by dilatation of the auricle," is of paramount efficacy. Henry Beates also says: "Wonderful results are to be achieved in senility. Here, where the whole venous system is so commonly the seat of passive hyperæmia, as indicated by prominently distended and tortuous veins such as of the temporal, a group of symptoms impairing comfort and usefulness usually presents, in the form of shortness of breath upon comparatively trivial exertion, an annoying and somewhat paroxysmal cough, ... inability to remember the usual details of daily duties (forgetfulness), a tendency to insomnia, or interrupted sleep, which constitutes a type especially amenable to this remedy."

. . . . "In more advanced senility, characterized by retrograde changes in the venules and associated degenerations, and in which the *arcus senilis* is established, where the premonitory phenomena of apoplexy occur and are indicated by such marked symptoms as confusion of intellect, incomplete aphasia, with facial and other partial but transient palsies, the drug is, *contrary to usual belief,* indicated." . . . . "The symptoms mentioned are due almost entirely to degenerative changes of the walls of the blood-vessels. The vasomotor constrictors have failed in their function, and that condition so essential to normality, *circulatory equilibrium,* is lost. The peculiarity of the venous system in having a capacity for containing the entire volume of blood in the body is here well shown, and the tension and pressure, always present in this condition, rupture the [structurally] altered radicals as well as interfere with the phenomena of nutrition. The indications for treatment are plain, from both the mechanical and the vital standpoint: restoration of the weakened heart, as far as possible, and especially of the vasomotor tone."

This reference to the powerful and widespread influences which a single drug is capable of exerting upon nutrition, through activation of vasomotor forces, through adrenal sufficiency, in so discouraging a condition as senility, will suffice to illustrate a type of remedy directed chiefly to the control of circulatory balance. Many other medicaments are in daily use and their skillful applications are capable of effecting surprising results.

It was my intention to review briefly so much as was then known of the clinical physiology of vasomotor regulation, but to do so would occupy too much space. Since the paper was originally sketched out the whole subject has been presented in the recently published second volume of Sajous's "Internal Secretions."

Perhaps it may prove of practical utility to allude briefly to my clinical experience of over twenty-five years in the use of auxiliary therapeutics, mainly physical agencies, whereby vasomotor regulation is the one most graphic effect secured. It was always attractive to me to study the effects of heat and cold, massage and regulated movements. These agencies have been known, since earliest recorded data on "treatment," to be dependable in expediting the progress of repair, even when used alone. My conviction is that if half of the exact study were given to the physiologic effects of these that has been so voluminously bestowed upon the action of drugs, our reparative triumphs would be far more conspicuous. It is eminently true that we have long needed more light on the problems conditioning the circulation in all its bearings, which the two volumes of "Internal Secretions" have now supplied. To these books the reader is referred for a comprehensive presen-

tation of vital phenomena. This humble contribution is merely to offer suggestions as to how results have been and can be obtained, supplementing powerfully the now possible intelligent use of our drugs. It is with renewed confidence that I, and others, can now proceed to study and use physical agents to enhance the distribution of blood, to regulate vasotonus, hence oxygenation, elimination, etc. Those which are most available are heat and cold, manual therapy, constriction hyperæmia therapy, and judiciously regulated muscular movements.

First, let us glance back upon the era of "water-cures," which, however crudely, sometimes ludicrously, conducted, making extravagant claims, yet in reality effected results far beyond the capacities of the equally crude medicinal therapy of the period. To-day we are provided with greatly improved hydropathic institutions, Russian and Turkish baths, and electric light baths, where hot, dry air, circular fans, or rain douches, carefully adjusted pressures from air or water, induce varying degrees and kinds of stimulation and reaction. Wherever such well-regulated institutions are available, physicians can scarcely do their duty by many cases, especially of protracted derangements, unless utilized.

In communities remote from centers very nearly as good effects can be wrought by ready-to-hand modifications of the principles common to all. Aside from the profound constitutional effects produced by home-supplied alternations of hot water and cold, the hot flat-iron, crude adaptations of dry heat by lamps, stoves, home-made cabinet baths, etc., there is also the psychic effect of education in resourcefulness and in thermogenics. I recall many satisfactory instances where I was able to initiate a plan of treatment for a temporary ailment which proved of saving efficacy to other members of the family, especially the old, infirm, those with damaged kidneys, inactive skins, the semi-paralyzed, chronic painfulness, lameness, and the like.

In a later communication will be given a brief summary of indications and more practicable methods. It is interesting to note a recent statement in an address to the students of Johns Hopkins Medical School, by William Sydney Thayer, professor of clinical medicine, in the November, 1907, issue of the Bulletin of the institution:—

"It seems to me true that . . . we have been delivering the application of these important methods of treatment to the trained nurse and to the surgeon, while standing aloof, in some instances with a traditional and Pharisaical pride in the thought that we are not as the osteopath—we use our heads only—not our hands—an attitude which is a fatal stumbling-block to progress in the *Art of Medicine.*

"Must we not, on reflection, be painfully conscious that not one of us (*sic*) has ever been properly trained in massage, and that few of us are familiar with the many ways in which hot and cold water may be used with advantage? The student as well as the nurse should be trained in hydrotherapy, in massage, in regulated movements, in electro-therapy."

This confession, as well as the sane recommendations, is highly significant, fortifying my own convictions and teachings for many years.

All we can accomplish through these somewhat inconvenient and cumbersome measures is equally possible through massage, manual therapy, the principle of which I have elsewhere described at length ("Diagnosis of Disease in Children," "The Hand as a Therapeutic Agent"). Suffice it to say that the principle on which these vasomotor effects are clinically wrought consists in the fact that by crude attempts at compression and relaxation of muscles and other masses not only is hæmatic ebb and flow enhanced, but a complex variety of vasomotor reflexes are induced. The most important of these are through the paravertebral tissues, which are innervated by the posterior primary divisions of the spinal cord. Hence continued pressure on the tissues of the back for two or three inches on either side of the spinal line, induces reflexly vasodilation in remote areas; and conversely, alternating pressure induces vasoconstriction. Between these two simple opposites there lies a broad realm of therapeutic possibility, and here skill and judgment are needed to get the effect desired.

Cold, by ice-bags, irrigations, douches, etc., is powerful to induce surface vasoconstriction. Certain enthusiasts have claimed by its use to secure all the effects desired. With cold, by short applications, we can produce prompt vasoconstriction, which will be balanced by a compensatory vasodilation. Hence the alternation of heat and cold enhances the ebb and flow of the blood, useful in a variety of acute and subacute states. By the continued application of cold much can be done to allay irritability in severe sensory disorders. While I was the assistant of Weir Mitchell he developed a successful plan of treating sciatica by ice-boxes, kept in contact for days and weeks. The limb was held at absolute rest, also, by a long splint and sandbags.

Chapman's ice-bag held the stage for some years as a means of treating a large variety of ailments. Surgeons use with satisfaction cold irrigations for many local conditions.

I am of the opinion that we do not employ these agents with the judgment, skill, and persistence which they deserve. The "drip-sheet" is to-day

the most reliable means of overcoming insomnia and many forms of cerebral excitement or other protracted derangements of circulation.

Heat, inducing primarily surface vasodilation, and cold, primarily vasoconstriction, by alternations, short or long, there follows activation of peripheral circulation, and hence powerful modifications in the entire cycle. This opens a wide field for artistic utilization.

(To be Concluded.)

Editorial

THE ARMY MEDICAL DEPARTMENT IN PEACE.

THE requirements for the officers of any efficient military organization are professional competence, administrative capacity, and unwearied zeal. When it is a medical organization as well, these necessities are emphasized. The medical department of any army, especially under the complex conditions of civilization, is potentially the real line of public defence. Unless the rank and file are physically fit, the nation rests upon a feeble reed and depends upon a broken cistern. Now, the ideal of the medical military mind to-day is the maintenance of such health as would leave no disease for treatment. That may be a doctrine of perfection, but it is always to be borne in mind when considering the aim and the needs of the medical department. Granted that the first duty of the medical department of our own army is to maintain its health, and the second, to restore it when impaired, and the third, to care for the wounded, we are to inquire how far it is equipped for peace and what are its needs for war. The strength of the peace establishment varies between 60,000 and 100,000 men, the fluctuating 40,000 being retained or not, as circumstances require. The officers are assigned as an efficient minimum for the maximum force. Men can be enlisted and in time may be trained; officers must be painfully educated, and the more highly specialized they are the slower the process. At this moment the legal allowance of medical officers is that for a strength of 42,000 men, not for 60,000 or 100,000. This is nearly 200 less than the minimum required. Is that right? Is such parsimony in any sense economy? It is trafficking, worse than trafficking, it is gambling, with men's lives. Cannot the intelligent voice of the country rescue the country from its own peril? We do not ask charity for aliens, we demand justice for Americans. The failure to act is with the House of Representatives, notwithstanding its own committee has recommended legislation. It is no answer to say that plenty of doctors would be glad to go, at $125 a month, or whatever is given, to practice medicine

in garrison. Doubtless every seat on every Bench in the country could be filled at a salary of $2000, to the detriment of both law and justice. The Medical Corps represents the first achievement of a great reform, that of competitive examination for admission and renewed examination for retention. This has been the rule for seventy-five years, with one notorious exception. Those who do not keep up to the mark drop out—are dropped—and these high standards are matters of common professional knowledge and pride. Good, all-around men usually attain the first rank in some professional qualification. Were two hundred additional officers authorized at once, it would require years to secure them.

While insisting upon more medical officers in simple justice to the body of the army itself, there should also be a popular call for commensurate rank for the seniors, many of whom reach the upper grades, if at all, only on the eve of superannuation. Rank, or relative official position as compared with other officers of equal service, and frequently of less vital responsibility, carries with it pecuniary compensation, but compensation in no degree the equivalent of equally prolonged professional work of the same quality in private life. Compared with the rest of the army, the medical department has from one-half to one-eighth as many positions of high grade to which its juniors may ultimately attain. Always by seniority, sometimes by selection, responsibility increases, but the rank which would authenticate the position does not always accompany it. This briefly states the case for peace.

This active corps deserves well of the country, and the civil profession at least should do what they can to have its members and their service fitly recognized by the government.

ALFRED A. WOODHULL.

THE DOCTOR'S PLACE IN SOCIETY, BOTH AS MAN AND PHYSICIAN.

THE country practitioner is one who does his work away from and not within easy reach of the medical centers. This applied more formerly than it does to-day, for communication is so perfect and rapid in all parts of the country that it is possible for nearly all to keep readily in touch with diverse centers of trade and business. I know and have known many of these so-called country doctors, and among them are many strong and vigorous men in both mind and body.

They are always potential factors in their neighborhood. Being strong men, they often drift away from pure professional work, and become too much routine practitioners. This is often not their own fault, for being available

men, they are often drafted into politics and into political places by their fellow-citizens, and thus in many cases the public, whilst gaining a good official, loses a competent and faithful physician. It would be much better if physicians working in isolated locations would take up some by-study which would keep them in their profession, such as botany, comparative anatomy, scientific farming, or horticulture, which combine so much of nature-study, rather than drift into politics or into the mere routine work of pill-giving and empirical drugging. As I have said before, I know well a great many country doctors, and I know many of them to be good, all-around men, fair general practitioners of medicine, good diagnosticians, some very good obstetricians, and some competent every-day surgeons; I know men who have done general amputating; I know men who have done all of the operations in obstetrics, including Cæsarean section; I know of ovariotomy having been done by the country doctor, and successfully, too. These men, like their city friends, have their own troubles; they have their professional jealousies, their little tilts with one another, their troubles with and from the neighborhood gossip and from ungrateful patients, but as a class they are equal to all emergencies, and can hold their own with the best of God's creatures.

The intelligent physician should have supervision over all matters appertaining to the economics of life. Indeed, I think one of the greatest factors in the usefulness of the physician is in preventive medicine. In public matters this is now making great strides, but I refer more particularly to its relation to families in private life. All families should be under the supervision of an intelligent, all-around medical man. All the environments of the home as well as of the individual should be supervised; then the physician can know in time and have some cognizance of the approach of many illnesses, and be able to warn those interested. As it is now, often are we summoned to some fair youth with a report from parents that a bad and persistent cold is the only trouble, when examination reveals a broken-down lung and a condition of well-advanced pulmonary tuberculosis, and the case almost hopeless. With competent supervision of a medical man over that family, observation, with the finding of a slight rise in the thermometer every evening, would have called attention to the true trouble months or years before, and this early finding out of the cause gives the only shadow of hope in these sad cases. Such a case illustrates the necessity of such general supervision of families, and herein is one of his greatest spheres of usefulness, and this he is bound to fill more and more as the evolution of a perfect civilization progresses.

JOHN JANVIER BLACK.

THE ELIMINATION OF SECTARIAN DOGMA FROM SCIENTIFIC MEDICINE.

At the request of the associate editor of The Monthly Cyclopædia I record the remarks made in the discussion before the Philadelphia County Medical Society, when considering the subject of eligibility to membership of all reputable practitioners of medicine whose treatment is declared to be not based upon sectarian theory or dogma:—

In considering this subject, I beg each and every one of you to give serious and unbiased consideration to the following facts. The highest duty of the physician is to treat afflicted fellow-beings with the best known means to effect relief and cure, in the best or most skillful manner, and for the best ultimate good. To emphasize this self-evident truth, it may be well to call attention to the fact that the laws determining the development of disease, as well as the laws of those sciences which underlie the prevention, relief, and cure of diseases, deformities, and injuries, are a creation of the Omnipotent Being, and, therefore, that men of scholarly attainment and broad intellectual development and culture cannot permit of action being either influenced or limited by any theory or dogma. It is obvious, therefore, that in the domain of those possessed of a liberal medical education, there can be no such thing as a "pathy." It is my observation that sectarian dogma in all departments of life is more or less at variance with scientific truth and fact. The competent physician, possessing a masterful knowledge of the laws of the medical sciences, conforms therewith and formulates the best therapeusis for the conditions presenting for his supervision and care. Sectarianism in medicine, and pathic dogma, can have no place among the learned and scholarly. Truth alone there prevails and governs action. It has ever been the purpose of the medical profession to advance its standard of qualification in order that the highest interests of the public could be the better served because of the resulting proportionate degree of efficiency, but, as you know, effort in this direction has for many years been averted by the sophistry and shrewdness of sectarian opponents. Had it not been for this commercial and sectarian opposition, years ago a measure could have been established by law that would have secured untold benefit to the public, and given to afflicted humanity the best possible medical care.

In my official capacity, occupying the responsible position I have had the honor to do, in representing the medical profession in the legislative halls of our Commonwealth, I have repeatedly observed this little grain of sand disturb the entire mechanism and obstruct its beneficent action. Bear in mind, please, and it is approximately true, that of 1200 practitioners in the Commonwealth who have received their degree from homœopathic colleges, it has been possible to

discover but six who are practicing strictly in accordance with the tenets of Samuel Hahnemann!! There may be others, but inquiry from nurses and physicians on all sides fails to discover them. If you make inquiry of those whom you know to have employed homœopathic physicians, you will always be informed that their doctor is liberal and does not follow new school teachings. Try it and convince yourself of the truth of this statement.

Is it known to each and every one of you that the homœopathic college in this city when graduating its classes grants two degrees? It confers the degree of doctor of medicine, and the Dean, or proper official, states that "by virtue of the authority within me reposed, I also confer upon you the degree of doctor of homœopathic medicine." Do you know that they teach the sciences of anatomy, physiology, bacteriology, chemistry, and pathology in the same manner as do colleges of medicine? Do you recognize also that in the higher subjects these men have the same training as do our students, because they also teach what has been designated as allopathic materia medica, and have a laboratory of pharmacy in which the students are trained in both the writing and compounding of prescriptions? It is therefore apparent that the sectarian school in question and our profession are already so nearly alike (their "pure materia medica" and its theories constituting the only difference) that it requires but a little action to cause coalescence and form a united profession. The fact, I might repeat for emphasis, that practitioners of homœopathic origin are practicing as we ourselves do, all such being swayed by a strong sense of duty and governed by that principle of doing unto others as you would be done by, is a matter for broad-minded and unprejudicial consideration, and in admitting such there can no longer be cause for claiming that the old school refuses opportunity and persecutes.

It is obvious, therefore, that more than 1100 practitioners of homœopathic origin, by study and observation have acquired an adequate knowledge of the scientific treatment of afflicted humanity, and are practically serving the community in the capacity of physicians who have risen above sectarian theory and pathic dogma. At this juncture, I would like to call your attention to the following fact, unpleasant as it is to those who are familiar with the faulty conditions. The law recognizes three so-called schools of medicine: allopathic, and it is hoped that each one of you will educate every individual with whom he comes in contact to a realization of the fact that there never was an allopathic physician, nor such a system of practice ever professed or taught; the homœopathic, and the eclectic.

Another fact which constitutes a factor working serious evil to the highest interests of our fellow-man is that a very large percentage of the

followers of sectarianism, notwithstanding they profess to observe principles indissolubly associated with the name, repudiate those loudly professed principles. Permit one of many instances to be quoted in illustration of the pertinence of this assertion (which I defy anybody to successfully contradict), and acquaint you with one of the happenings behind the scenes, as it were, when the great profession of medicine in this Commonwealth endeavored to so amend our medical practice act as to elevate the standards of efficiency, and thus secure the greatest benefit to afflicted humanity. One of the sectarian bodies strenuously opposed this, declaring their body would be exterminated if a one-board-of-examiners bill became a law, and argued for the perpetuity of a certain name. Their plea savored more of the mistaken loyalty to a dying cause, than for fundamental principles constituting fact and truth. The medical profession took up their line of argument, and submitted an amendment to the legislative body to the effect that certificates of license should have inscribed upon their face the name of the particular school under which the examination before the State Board of Examiners had been taken.

Gentlemen, I want each and every one of you to contemplate the significance of this fact, to wit: that the sectarian body in question insisted upon an official document, granting the right to practice medicine, but not to bear evidence of sect or school. They want licenses which give them the right to practice medicine, and they will oppose anything that would legally compel them to keep within the narrow limitations of the "pathy" in which they profess to believe and which their actions prove they know to be so insignificant. Hence their cry of "exclusion" by the regular profession, "persecution," "vituperative criticism," and "invidious distinction," none of which can be laid at the foot of the medical profession. These claims are falsely made because they themselves are not in practice faithful to their avowed professional principles. Certainly a scientific physician cannot rightly be a party to a method of treatment which is based upon mere theory and dogma, and exclusive of scientific truth, especially when these are known to be at variance with the fact. It is unfair to charge exclusion and persecution to the followers of any science which is based upon the most candid search for truth, when such challenge comes from self-professed narrow "pathists." Such specious arguments do influence legislative bodies, who are easily deceived into believing that the vast profession is endeavoring to crush a much abused minority. Such arguments could well be answered by calling attention to the fact that among the entire community, there is most fortunately only a small percentage of individuals who entertain beliefs based wholly upon certain vague theories, and act upon the resulting convictions. The

conduct of this peculiar group is at such variance with the common standards of the world, and exercises such prejudicial influences on mankind, that it is considered to be just and proper, indeed a necessity, to restrain their actions by having them securely placed in what we call insane asylums. It is just as foolish and just as dangerous in deciding matters concerning the care of the public health, to tolerate the influences of empty theories, howsoever artfully applied, as to defeat impartial effort by the establishment of false doctrines.

Is it not self-evident, therefore, to each one of you representing the medical profession that your highest duty for the public good demands that prejudice and sentiment be over-ruled, and that intellect, scholarship, and the fearless doing of right secure advocacy of this amendment which will admit to membership to this influential body physicians who declare that their practice is not warped and controlled by sectarian theory or dogma? This unquestionable advance in the medical world will ultimately secure physicians of medical learning and skill to afflicted humanity, in which "pathy," with its inseparable disadvantages and injurious consequences, will have long since ceased to exist. It will be a move in the right direction entirely for the good of fellow-men because all can then meet on common ground and profit thereby.

HENRY BEATES, JR.*

THE USE OF THE "PHARMACOPŒIA" IN ITS RELATIONS TO "INTERNAL SECRETIONS."

AT the recent annual meeting of the American Pharmaceutical Association the following resolutions were adopted:—

WHEREAS, The American Medical Association, the American Pharmaceutical Association, and the National Association of Retail Druggists, together with many State and local organizations and journals in both professions, have been for some years endeavoring to bring about a return to the practice of medicine based on the Pharmacopœia; and

WHEREAS, The medical colleges are represented on the Committee of Revision of the United States Pharmacopœia; and

WHEREAS, It is manifest to the thoughtful men both in medicine and pharmacy that a very large number of medical men might be better informed regarding the Pharmacopœia as a book of reference and standards: Be it therefore

Resolved, That it is the sense of the American Pharmaceutical Association in convention assembled, that a great advance in the ethical practice of

* President Pennsylvania State Board of Medical Examiners.

medicine and pharmacy will be made when the medical colleges make the Pharmacopœia a prescribed text-book or book of reference and require familiarity with it in their examinations.

Resolved, That we request the governing authorities of all medical colleges in the United States to put into force such a ruling in their respective institutions as will insure in future classes a well-grounded knowledge of materia medica and pharmacognosy, as set forth in the Pharmacopœia.

We are glad to welcome and publish these resolutions. They are in accord with the spirit of the times, with the awakened sense of responsibility of the profession of Medicine. Let us "stand as an old sea wall" between our patients and those influences which work for harm, be these from without or from within our ranks. A new era is dawning, in which the collected might of an old, a noble, a learned body of men and women, committed wholly and conscientiously to the physical and moral betterment of the race, will realize as never before their supreme duties and solemn responsibilities. Looking back to a period, not so remote, in which the potential of this group of laborers for the common good was recognized, was admitted, and who stood so high among their fellows that their counsel and example were esteemed at their true worth, we shall see this paramount condition return with added force.

There is, however, another side to the question. We must exercise an eternal vigilance against the errors of those of our household or clan. We deplore the flippancy of our confident ones who, from their height of reputation, earned in some avenues, yet will depreciate the mature wisdom, assail the integrity of the statements and conclusions of those in other lines of research. It is with sorrow that we warn the waverers, those whose confidence is jarred by skepticism uttered by men whose duty is to conserve, to warn it may be, to counsel, but not to destroy. We offer, then, as a timely warning, the vigorous editorial which appeared in the November issue of our esteemed contemporary, the Medical Times, of New York, under the caption "Dr. Osler's Brilliant Maxims":—

"There is oftentimes nothing quite so mischievous as the *mot,* the essence of which lies in its containing some but not the whole of the truth and which is effective, especially with shallow minds, by reason of its cleverness. Dr. Osler is a brilliant thinker, an incisive writer, and a scientific man. We consider it unfortunate that his evident pleasure in epigrammatic expression has from time to time—quite too frequently—been satisfied at the expense of the scientific aspect of his psychism. We have in mind his recent address before an audience of London medical students. Can a body of men be

imagined before whom one should be more careful to avoid misleading statements; when an address should be as devoid of the epigram, a form of rhetoric having really no place whatever in scientific expression, in which it is above all else essential that nothing but what is precisely and exactly the truth shall be stated? These medical students were invited to adopt the following aphorisms by which they were to be guided in their professional futures: 'Be skeptical of the pharmacopœia.' 'He is the best doctor who knows the worthlessness of most medicines.' 'Study your fellow-man and fellow-woman and learn to manage them.' . . . . Who shall not now be entitled to say: 'The pharmacopœia is a fake'; 'medicine is worthless'? Shall not every pseudo-scientific bunco-steerer interpret Dr. Osler's clever expressions to his own nefarious ends? We know that the pharmacopœia must be revised, precisely as every other human institution; but we know, too, that the larger part of it is made up by the labors of scientific men who are not fools. Many medicines are certainly worthless; but most of them are not. And those which are worthless are quickly enough dropped immediately they are found inefficacious. Certainly we must be tactful in the management of our patients; but who among us is ready to practice deception in the way Dr. Osler's brilliant *mot* would imply?"

And yet, there is much to account for Dr. Osler's attitude. The character of his training, or his impulses, have never adapted him to recognize the paramount efficacy of the empirical use of medicinal remedies. He is keenly alive to the prevailing ignorance of the relations between cause and effect. The growing lack of confidence in drugs, the inevitable outgrowth of hitherto inadequate physiological knowledge on which their action can be explained, has blinded him to their enormous inherent possibilities for good. But he need not now re-echo such archaic utterances as those of Oliver Wendell Holmes half a century ago: "I firmly believe that if the whole materia medica, as now used, could be sunk to the bottom of the sea, it would be better for mankind—and all the worse for the fishes." It is indeed fair to inquire whether that man can retain a strictly scientific judgment who encourages himself to wander off the tracks of exact science into realms of literary latitude.

The safe, the steady light is emitted by the man who patiently scans the whole mass of testimony, analyzes, weighs, conscientiously rejects and synthetizes. The true guide is not he who is beguiled into overmuch oratorical diffusiveness, scintillating maxims, but who steadily weaves the web of logic into the woof of sifted facts. The true leader in thought is he who points the way through devious paths, rescues isolated truths, places them in suitable,

inevitable juxtaposition, wherefrom emerge conclusions soundly formed. That man is the best and safest teacher of medicine who has persistently, though quietly, labored to strengthen our therapeutic weapons, *i.e.*, to place our knowledge of the action of our standard remedies upon an exact physiologic foundation—as Dr. Sajous has done for us in his work on the "Internal Secretions." Such work alone will make it possible, nowadays, to comply with the reasonable prayer of the Pharmaceutical Association.

J. MADISON TAYLOR.

Cyclopædia of Current Literature

ACNE AND CHRONIC ECZEMA, TREATMENT OF.

The writer reports his experience with the x-ray treatment of acne and eczema. He uses the rays in mild cases of acne after a faithful trial of local and constitutional measures. In pustular and indurated acne he asserts that time is usually lost by waiting. Medication will remove comedones and produce desquamation, but it has little effect on the overactive sebaceous glands as has the x-ray; in pustular acne the rays seem to have a fourth action on the staphylococci by rendering the soil inert. Care must be taken to avoid undesired results, and the author has been in the habit of using a very low vacuum tube with the anode at eight inches from the skin, one and a half milliamperes of current, and from five to ten minutes' exposure, according to the condition of the patient. This is kept up for nine treatments; by that time it is usually possible to determine how much more will be required, and what variations of the treatment are needed. Acne rosacea, while more resistant, has yielded the best results when glandular inflammation predominates.

A majority of cases of eczema require only local treatment and the rays are probably the most efficient form. They are not indicated in the acute forms and are most effective in the squamous type. In papular eczema more intense radiation is required to relieve the pruritus, and relapses are more frequent. In chronic squamous eczema the skin is in poor condition, nutrition and vitality are depressed, and more than a mild dosage is liable to result in a severe dermatitis. A low tube is used by the writer, ten inches from the surfaces, with one and a half milliamperes current, provided that the patient is in good physical condition; a safe rule is to start with ten minutes' exposure three times a week. Eight or ten such treatments will clear up many cases of squamous eczema, but a second trial may sometimes be required. R. H. Boggs (Journal of the American Medical Association, August 31, 1907).

ANÆMIA FROM GASTROINTESTINAL DISEASE.

Insufficiency of the blood-forming function is not, primarily at least, at fault in the production of the secondary anæmias following chronic gastrointes-

tinal disease. The writer considers the anæmia more probably due to the existence in the blood-serum of hæmolytic substances, perhaps produced by chemical changes connected with functional disturbances in the digestive organs. Besides the indirect pathologic evidence of the existence of such hæmolytic action, the writer has been able to demonstrate it directly by the action of the serum of anæmic rabbits on the blood of normal ones. With its globulicidal power, it has a certain stimulant action on the blood-forming apparatus in the bone-marrow, which, however, seems to be more quickly exhausted than is its destructive action. The author considers that his study emphasizes the importance of functional over anatomic gastric lesions in the production of anæmia. L. L. Tixier (Semaine médicale, June 19, 1907; Journal of the American Medical Association, September 28, 1907).

APOMORPHINÆ HYDROCHLORIDUM.

The effect of apomorphinæ hydrochloridum, when administered by the mouth, is widely different from the hypodermic effect. Hypodermically, it is a most valuable centric emetic in doses of $^1/_{20}$ to $^1/_6$ grain, acting speedily, certainly, and gently, even in cases of narcotic poisoning prior to the stage of coma. Average adult dose is $^1/_{10}$ grain. It is also recommended to be tried in all cases where hypnotics or antispasmodics are indicated, in doses preferably somewhat less than the emetic dose, depending upon the tolerance of the individual, *i.e.*, $^1/_{40}$ grain or more. When given hypodermically to children or debilitated subjects, the possibility of its depressing effects should be borne in mind and appropriate doses of strychnine simultaneously administered.

By the mouth its centric effects are so uncertain as to render it useless as an emetic, and of little value as a hypnotic. The effect is practically limited to expectorant action. Average adult dose is $^1/_8$ grain every two or three hours, dissolved in syrup of wild cherry or syrup of lactucarium, with a few drops of dilute hydrochloric acid to insure solution. It does not increase the effect of other narcotics, such as morphine, codeine, or heroine, which may be simultaneously administered when it is desired to lower the excitability of the respiratory center without checking secretion. Strychnine may also be simultaneously administered in debilitated subjects for its stimulating effect on the respiratory center and to forestall possible depression, although even in the case of delicate children there is little fear of such depression from the administration of the pure crystalline preparation by the mouth.

Apomorphine, like other expectorants of its class, if used at an improper stage, when there is abundant secretion or pushed to the extreme, may flood the bronchial tubes with mucus and drown the patient in his own secretion, especially if he lacks muscular power to expectorate. Such results, however, are not to be feared from an intelligent use of the remedy. Crystalline apomorphinæ hydrochloridum should always be specified. There is a slight danger of adulteration with morphine if the drug is not thoroughly washed when manufactured. On general principles, the fresh preparation should be used if possible, but a greenish discoloration of tablets or solutions does not necessarily contraindicate their use, especially if originally prepared from the pure crystalline salt by a reliable drug firm. E.

L. Fisk (Medical Record, September 28, 1907).

BLASTOMYCOSIS.

Systemic blastomycosis and coccidioidal granuloma are caused by closely related varieties of organisms that Ricketts and Ophüls would place with the oidia. Culturally, these organisms may resemble one another very closely. In the tissues of the infected animal or human being, in which both exist as spherical bodies, they present this striking difference: that the organisms of blastomycosis multiply almost wholly by budding, while those of coccidioidal granuloma multiply essentially by endogenous sporulation. Neither forms mycelium in the animal body.

Systemic blastomycosis and coccidioidal granuloma resemble each other in many respects, both clinically and anatomically, but at the same time there are certain well-marked differences of which the following appear to be constant and distinctive: The nodular lesions of coccidioidal granuloma bear a closer resemblance to the typical, specific tubercle than the nodules of blastomycosis. In coccidioidal granuloma there is marked tendency to involvement of the lymph-nodes; in blastomycosis, slight. As already stated, in coccidioidal granuloma the organisms multiply by endogenous sporulation; in blastomycosis, by budding.

Nothing is yet known concerning the conditions that lead to natural infection with either of these diseases, but human beings once infected appear susceptible, and the apparent infrequency of the diseases may be explainable by assuming that as yet the occasion necessary for infection is infrequent. Ludvig Hektoen (Journal of the American Medical Association, September 28, 1907).

CAISSON DISEASE.

It is now generally admitted that the very varied symptoms produced by rapid decompression from high atmospheric pressures and popularly known as "caisson disease" or "diver's palsy," are due to liberation of bubbles of gas, chiefly nitrogen, in the blood and tissues. The writer's investigations show that at body temperature fats dissolve more than five times as much nitrogen as an equal volume of water or blood-plasma. The special tendency of the fat-containing tissues (such as subcutaneous tissues, spinal cord, and peripheral nerves) of caisson workers and divers to suffer injury from the liberation of gas bubbles after rapid decompression is dependent upon this great solubility. H. M. Vernon (Lancet, September 7, 1907).

CALCIUM SALTS, USE OF.

The use of calcium salts is recommended by the writer in chilblains, 10 grains thrice daily in a tumblerful of water; in ulcers of the leg, the iodide, 3 grains thrice daily; in epistaxis, the chloride, 15 grains twice daily; in painless œdema of the ankles, the chloride, 15 grains thrice daily for three days. In a syphilitic perforation of the hard palate, under the iodide, 3 grains thrice daily for two months, the perforation healed. In menorrhagia, with epistaxis and erythema nodosum, the chloride, 15 grains thrice daily, has been beneficial; in pneumonia with hæmoptysis, the iodide, 3 grains thrice daily for three days, gave good results. If nausea occurs, the author advises increasing the dilution of the drug. S. J. Ross (Medical Press and Circular, September 4, 1907).

CHLOROFORM POISONING, ADRENAL EXTRACT IN.

In a paper on the restorative action of adrenal extract in acute and intense

cardiac failure, the author insists on the pressing need of an efficient and safe treatment of serious asphyxia due to poisoning by a general anæsthetic. Massage of the heart after more or less exposure of this organ by operation has not, it is stated, given results favorable to so severe a procedure. The author's attention has recently been directed to the results of recent research on the general action of adrenal extract, which show that this substance, in addition to its great efficacy as a local hæmostatic, is capable of exerting a marked stimulating influence on a failing and collapsed heart. Gottlieb has found that by the injection of a solution of adrenal extract into animals poisoned by chloral hydrate, the action of the heart can be kept up until the period of danger has elapsed. It occurred to the author that a like result might be thus attained in cases of cardiac collapse caused by chloroform poisoning, and he has proved by experiments on animals that when the heart's action has been arrested by an excess of inspired chloroform, the blood-pressure can, in the course of a few minutes, be raised not only to the normal degree, but even beyond this. The author has not had any opportunity of trying on the human subject the effects of injection of adrenal extract in chloroform poisoning, but two instances are reported in which this method was practiced with complete success in the treatment of very intense collapse, regarded as the result of lumbar anæsthesia, in one patient by cocaine, in the other by stovaine. Although the writer fully recognizes the value of this method of producing anæsthesia, which is frequently used in Sonnenburg's clinic, he is of the opinion that it is not so harmless as is generally supposed. The details of the two reported cases seem, however, to indicate that in each the grave condition removed so effectually by the injection of adrenal extract was one not so much of poisoning by the anæsthetic agent as of severe shock following a prolonged abdominal operation on a subject of advanced age. The symptoms in both cases, which were certainly very grave, heart-sounds being no longer audible, began to improve in about ten seconds after intravenous injection of a very weak solution ($^1/_{2000}$ to $^1/_{1000}$ of a gram) of adrenal extract.

Injections of adrenal extract or epirenin are likely to be found very useful in cases of severe shock and of poisoning by a general anæsthetic, but caution is necessary in applying such treatment to any patient whose heart has been weakened by a long and exhausting illness. Kothe (Zentralblatt für Chirurgie, Nu. 33, 1907; British Medical Journal, October 5, 1907).

CHOLELITHIASIS, MEDICAL TREATMENT OF.

Two things have contributed to put the treatment of cholelithiasis on a certain basis: First, Naunyn's demonstration that gall-stones are chiefly due to infection and stagnation of bile, supplemented by Kramer's experiments showing that the colon and typhoid bacilli precipitate bile in the test tube; and, second, the revelations of the actual conditions by surgeons.

Prevention must be limited practically to those who have a known tendency, as shown by previous infection of the biliary tract. The measures required are generally well known. They consist in regular, healthy habits as to diet, regulation of the bowels, moderate exercise, avoidance of tight clothing, and anything that can cause congestion of the portal circulation. Systematic deep

breathing is perhaps useful in overcoming such congestions. Among drugs, salicylates are probably of definite value as disinfectants and cholagogues, but they should be watched and stopped if undesirable effects appear.

The presence of the stone is less important than the existence of the infection, and the therapeutic problem is not to lessen pain so much as to lessen inflammation and the attendant risks. The majority of the cases, in the attack, are not surgical, but they should be viewed with a surgical eye, and if the physician is unable to do this, he should have a surgeon's coöperation.

For the attack, anodynes to relieve pain, but not to entirely becloud the clinical picture, are advised. The writer does not use chloroform in these cases. Local hot applications and the hot full bath are useful, but he prefers copious washing of the stomach with hot water or hot Carlsbad water, which, theoretically, should lessen congestion and act as a general sedative to the affected tissues. Rest, so far as possible, and movements of the bowels should be encouraged. The after-treatment depends on the suspected conditions in the biliary tract, and after the acute symptoms have passed, especial attention should be given to the occurrence of bile in the urine or stools, leucocytosis, etc.

The author thinks the passage of gallstones out through the common duct a comparatively rare event, and that in many cases in which this is supposed to have been the case, perforation has actually occurred. Perforation can easily happen in the severer attacks of bilious colic, but he is also convinced that it sometimes occurs with symptoms so mild as to be overlooked at the time and only discovered by operation or autopsy. In conclusion, the writer expresses the opinion that olive oil may possibly be of some service in reducing gastric hyperacidity and hypermotility, thus improving intestinal digestion and relieving some of the symptoms. G. Dock (Journal of the American Medical Association, October 26, 1907).

DIPHTHERIA, IRREGULARITY OF THE PULSE IN.

The writer considers that irregularity of the pulse in diphtheria in children is really of little special significance, being due to the great incidence of the disease in the early years of life, especially the fourth and fifth years. Children at this age commonly exhibit this symptom in any febrile disturbances and often in apparent health. The irregularity is very common, indeed, it being found in over 80 per cent. of the author's cases. Comparisons of similar numbers of diphtheria and scarlet fever cases showed about the same percentage of cardiac irregularity. The irregularity is referred by various authorities to a nervous origin, rather than a cardiac. There seems to be an excessive susceptibility in the inhibitory action of the vagus, and it is believed that the rhythmical stimulation of the respiratory center has a rhythmical effect on the vagus center. The author refers to Barr's explanation of the mechanical effect of the respiratory act on the circulation. The fall in blood-pressure in disease is undoubtedly the primal cause setting up the irregularity.

If actual myocarditis is present, an irregular pulse is, of course, of the gravest significance. In most diphtheria cases with irregularity the latter continues during hospital stay, and the children are kept in bed week after week when they would do better if in the open air, which would certainly improve

their anæmia. Assurance must first be obtained that the irregularity is more than respiratory. The presence or absence of cardiac signs will help decide this point. O. H. Peters (Lancet, September 14, 1907).

DIPHTHERIA, PROPHYLAXIS OF.

While it cannot be denied that diphtheria antitoxin has a certain prophylactic value, the writer believes that its benefits have possibly been overestimated and its use pushed too far. He describes an outbreak of diphtheria in a general hospital in which antitoxin was used as a prophylactic. Out of 21 persons whose throats were known to contain diphtheria bacilli, and who were injected with antitoxin, 7 developed an attack. Since antitoxin is rapidly excreted in the urine, there is a limit to the duration of the immunity conferred. Three weeks is the period generally assigned, and this should probably be reduced. Increasing the dose does probably not increase to any extent the duration of immunity, as larger doses disappear just as quickly from the blood. The varying amounts of immunity of different individuals must probably also have some influence.

The writer holds that prophylactic injections of antitoxin are not to be employed as a measure for stamping out an epidemic of diphtheria, but as a secondary aid in guarding against the consequences of attack. It has been generally agreed that the injection of antitoxin has no effect in hastening the disappearance of diphtheria bacilli from the throat, either after an attack or otherwise. Where injections of serum are the only means employed to suppress an epidemic, after the individual attack is warded off, the infection passes unnoticed, and the "carrier" continues to spread the disease.

The procedures of real importance in dealing with an attack of diphtheria are two in number: (1) Bacteriological examinations of throat; (2) isolation of "carriers" of infection under proper medical supervision. Where both these measures can be systematically carried out, there is really no necessity for prophylactic injections of antitoxin, the latter procedure being confined to the few whose throats are found to contain diphtheria bacilli. It is probably true that if an attack develops in spite of antitoxin, the symptoms are milder. Besides the trouble and expense of serum injections, the annoyance and danger occasionally associated with their use must be borne in mind. Healthy adults seem peculiarly susceptible to this "serum" disease. Fatal results are indeed so rare as to be almost negligible, but dangerous symptoms may be produced by repetition of the injections, as has been advised by some.

The prophylactic use of antitoxin is much more important in children under four years of age, because in such the action of the toxin is more severe and the diagnosis is more difficult and contains greater risk if there is laryngeal involvement. O. H. Peters (British Medical Journal, October 5, 1907).

DIPHTHERIA, SOME COMPLICATIONS OF.

The writer refers to complications additional to cardiac failure, paralysis of the diaphragm, suppression of urine, bronchopneumonia, and certain nervous sequelæ, all of which are well known. The first of these is enlargement of the liver, which is usually associated with cardiac failure, and is due to distention of the liver capillaries with blood. If recovery from the diphtheria occurs, the

liver usually returns to its normal size. Disease of the arteries is also a complication, yellow patches being found in the aorta and in the mitral valve, and nodules of varying size in the smaller arteries, especially in those of the brain. They are supposed to be due to septic micro-organisms, which are associated with the diphtheria toxins. Interlobular emphysema may occur, the air which has escaped from the alveoli of the lung appearing beneath the pleura. It may result in pneumothorax. Clubbing of the fingers is a rare complication, and has been occasionally seen in children with whom gangrene of the lung has developed. T. Fisher (Practitioner, October, 1907).

EXOPHTHALMIC GOITER, PATHOLOGY OF.

From an examination of the anatomic conditions found in 60 cases of exophthalmic goiter of varying degrees of severity, the changes found in the thyroid were practically the same in all cases, varying only in degree and extent, according to the severity of the case. They consist essentially in a great proliferation of the epithelial cells by a process of mitosis, and the change is anatomically the same that is produced in compensatory hypertrophy when a portion of the normal gland is excised, but in that case no mass of tissue in excess of the normal is produced and no symptoms result. There cannot, therefore, be a complete analogy between the two conditions, and there must be something more than the mere hypertrophy, either in the thyroid secretion, or in some other factor quite aside from the thyroid. There seem, however, to be no constant pathologic conditions elsewhere, in the parathyroids, sympathetic system, central nervous system or other tissues and organs, and as the case is improved by thyroidectomy and made worse by thyroid extract, we are almost forced to consider the overactivity of the gland at fault. There is, however, no other example of the spontaneous hypertrophy and overactivity of an organ to the damage of the rest of the body, and the author suggests that there is possibly some underlying infection, such as influenza, reaching the thyroid via the pharynx and setting up a non-suppurative inflammation ending in hypertrophy and perverted activity.

The relation of iodine to the disease is interesting, it being claimed by Brown that it aggravates the symptoms. It may also be possible that a lack of vasoconstrictor action of the sympathetic on the thyroid is a factor. It appears probable that it will be through studies of the thyroid disturbances that the explanation of the disorder and its rational therapy will have to be looked for. W. G. MacCallum (Journal of the American Medical Association, October 5, 1907).

GASTRIC CARCINOMA, DIAGNOSIS OF.

The early diagnosis of gastric carcinoma must remain the important factor leading to permanent amelioration. Of the important early subjective symptoms the writer mentions simple dyspeptic disorders: anorexia, flatulency, and general diffuse abdominal discomfort four or five hours after eating. Vomiting, hæmorrhage, pain, and tumor are usually late symptoms. The suspicion of malignancy usually rests upon the ordinary physical examination. The test-meal and the stomach are essential adjuncts to a diagnosis, but a complicated apparatus is not essential, and the same is true concerning complicated analyses. Free hydrochloric acid is absent in most of the cases in which symptoms of malignancy are present. Oc-

cult blood in the stools and stomach-contents is believed to be of real diagnostic value. Tissue fragments, pyloric stenosis, and gastric rigidity are of less diagnostic value than has been asserted by various writers. Blood-examination reveals nothing distinctive for early diagnosis. Exploratory operation is the measure which is of greatest importance, and Mayo's statement is approved that "a suspicion of cancer of the stomach which cannot be disproved by known methods within a short time, should lead to exploration." W. J. Stone (American Journal of the Medical Sciences, October, 1907).

HÆMATURIA, ESSENTIAL.

The supposition that a hæmaturia originates from a kidney without anatomical changes is not permissible if the following conditions are not fulfilled: In the first place, it must be absolutely proven that the hæmorrhage does not come from some other part of the urinary tract except the kidney, by means of cystoscopy and ureteral catheterization; and, secondly, microscopic examinations of the supposedly anatomically normal kidney must have been made.

Profuse bleeding from the kidney may be the consequence of very slight changes, microscopically, in the kidney. The present status of the microscopic findings does not permit the drawing of any conclusions, from the grade of changes present, relative to the severity of the hæmorrhage, or to infer with certainty the tendency of such a kidney to bleed. Therefore it is impossible to declare such changes as being too significant to explain the tendency to bleeding.

In some cases of "essential hæmaturia" decapsulation as well as nephrotomy proves itself a definite curative agent. In other cases, and also in such cases which, like the case presented, show only apparently insignificant changes microscopically, the result is not a permanent one and the necessity for a nephrectomy may present itself at a somewhat later period.

The clinical symptoms of renal hæmaturia correspond to various anatomical and microscopical changes in the kidneys in the individual cases. H. L. Kretschmer (Chicago Medical Recorder, October, 1907).

HÆMOPTYSIS DUE TO TUBERCULOSIS.

Early pulmonary bleeding in consumptives is apt to be ascribed to congestion of the bronchial mucosa, but it is probable, rather, that minute areas of necrosis already exist when these bleedings occur. That a high grade of congestion, however, is a factor, is shown by the influence of physical strain, and the heart's condition must also be considered. Patients with chronic valvulitis undoubtedly have more frequent hæmorrhages. Hæmorrhages from eroded vessels and miliary aneurisms are the more frequent causes of fatal results, and less frequent occurrence of pulmonary hæmorrhage in advanced cases of consumption is ascribable to endarteritis, causing gradual thickening and greater resistance of the vessel walls. Undoubtedly there is in many cases an existing hæmorrhagic tendency, and hereditary taint is often obvious. Aggravation of the cough and muscular exertion are frequent exciting causes.

The writer points out that the frequency of the symptom is very marked, and agrees with Osler that it is a feature in from 60 to 80 per cent. of all cases. His own experience does not

show greater frequency in females than in males, and he believes that sexual differences are not as great in this regard as has been claimed. Season has a decided influence, as shown by his table. More cases occur in the spring and summer months than in the winter.

Hæmoptysis must be regarded as the result of existing tuberculosis, although other signs and symptoms are lacking. The attack does not seem to have any marked effect in reducing temperature in the majority of cases, and sometimes there may be a notable rise, which the writer is inclined to ascribe, sometimes at least, to exacerbations of tuberculous inflammation from the setting free of toxins, etc. The majority of bleedings occur after secondary infection with the streptococcus. There is a form of periodic hæmorrhage, though it is not common.

Prophylactic measures are unduly neglected. The importance of rest and avoidance of stimulants are hardly duly appreciated. A residence away from the sea-coast and a cold, dry, aseptic air are beneficial, as pointed out by Curtin. Among drugs the author relies mainly on opium, discontinuing it if abundant moist bubbling râles are heard over the uninvolved portion of the lung—a rare event, except in case of rupture of a miliary aneurism. In case there should be a ruptured aneurism with profuse hæmorrhage and danger of inundation of the uninvolved lung, cough should be encouraged rather than suppressed, and opium is contraindicated. J. M. Anders (Journal of the American Medical Association, September 28, 1907).

INTESTINAL OBSTRUCTION.

The condition of intestinal obstruction is described in two forms by the writer: strangulation ileus, where, in addition to obstruction, there is interference with blood-supply; and obturation ileus, where the blood-supply is not disturbed. In both of these surgical treatment should be applied, if possible, within the first twenty-four hours, but in the strangulated form there is special danger in delay. Fortunately, in this form the symptoms of onset are more acute and characteristic. The symptoms due to interference with circulation are pain (probably due to pull on the mesentery), peritoneal shock, and reflex vomiting. The obstructive symptoms, fæcal vomiting and distention, occur later and should not be waited for in diagnosis. The severity of the shock is greater than in appendicitis, gall-stones, or renal calculus, a point which is of value in diagnosis. The patient is pale, with rapid pulse and feeling of weakness. The local tenderness and spasm of appendicitis and cholecystitis are absent, but there is a general rigidity of the abdominal muscles. Occasionally a distended loop of intestines can be palpated, externally or by vagina or rectum, and when this is present it is pathognomonic. Peristalsis may be made out in certain cases. A leucocytosis is constantly present.

In obturation ileus the acute primary symptoms are frequently absent, but there is often a history of previous constipation and colic, and frequently of previous attacks of obstruction. Vomiting may be absent, but the constipation and distention must be regarded as suspicious. Visible peristalsis is a constant early symptom where the small intestine is the seat of the obstruction, but the distention is much less than where the obstruction is lower. For the general practitioner it is to be emphasized that the diagnosis of any intestinal obstruction should be made early, and

that cathartics by mouth and morphia are to be avoided; the stomach should be washed out and enemata given. In operation, chloroform is the best anæsthetic. In desperate cases, a simple colostomy under cocaine is indicated. J. C. Bloodgood (Bulletin of the Johns Hopkins Hospital, August, 1907).

MIDDLE-EAR SUPPURATION, CLEANSING TREATMENT OF.

In twenty years' experience the writer has found that in the majority of cases chronic middle-ear suppuration will yield to cleansing treatment. He includes cases in which the infected area is spreading and also those with acute exacerbations, both rightly considered very dangerous. The cases that do not yield are those in which there is so much caries that it cannot readily be removed by natural processes; those in which there is active osteitis; those in which sepsis has spread outside the bone; those in which there is some special infection, such as syphilis or tuberculosis; and, lastly, those in which vital parts are involved, requiring immediate attention. In other cases the essentials are proper drainage and attention to the condition of the Eustachian tube and the nasopharynx. If the drainage is sufficient and there are no collections of thickened material, dry wiping with boracic powder applications gives satisfactory results. Cheesy material should be wiped out, or syringed out with a strong solution of bicarbonate of soda in neutral salt solution. If this is not sufficient, suction may be employed, and the serous exudate and possible hæmorrhage act as an antiseptic wash and help to remove some of the solid particles. A persistent dirty discharge may call for peroxide of hydrogen, followed by salt solution, alcohol, or silver nitrate. Caries should be treated by cleanliness, and feeble granulations be stimulated by silver nitrate. For this, astringents are advised. W. S. Bryant (Journal of the American Medical Association, September 14, 1907).

MORPHINISM.

The narcotic method of treatment used by the writer consists in the use of various hypnotic remedies, so combined or alternated as to keep the patient asleep or in a quiet or comfortable condition for a short time, while the morphine is being completely withdrawn. When he awakes the period of suffering is passed, and all desire for morphine is gone. The painful part of the morphine withdrawal is accomplished while the patient is unconscious, on the same principle that a surgical operation is performed under the influence of anæsthetics.

The hypnotic remedy most often recommended for morphinism is hyoscine, administered in large and repeated doses. The author considers this plan of treatment too uncertain to be recommended as a routine measure. While it may answer as an exclusive remedy in some cases, yet usually it produces delirium, and occasionally the delirium lasts for some time after the administration of hyoscine has been stopped. He has, however, often found it useful as an adjuvant to other sedative remedies, but many patients do not bear it well, and are made worse by its exhibition if it is not combined with other remedies. The exact remedy or combination of remedies must be determined by the idiosyncrasy of the patient, and occasionally several combinations will be tried before the one best suited to the peculiarities of the patient in hand is found. But with experience the phy-

sician will be able to get his patient promptly into the right condition for a total withdrawal of morphine, without pain and without danger. C. J. Douglas (Medical Record, September 14. 1907).

NEPHRITIS, GASTRIC SECRETION IN.

The relations of the gastric secretion to nephritis are very complex, but they seem to be governed by two factors: the hyperchlorhydria of the organism and the condition of the gastric mucous membrane. Every nephritis, even though latent, influences the gastric secretion. When the clinical symptoms are reduced to traces of albumin in the urine, or a simple arterial hypertension, there is a general hyperchlorhydria which forms an excitant to the gastric secretion, and exaggerates it in the same manner as dechloridation diminishes the same secretion. But another and antagonistic element appears when the nephritis becomes more pronounced. The retention of the chlorides induces alterations in the gastric mucous membrane comparable to those of the renal cells, and it is probable that the hyperchlorhydria aggravates equally the renal and gastric lesions. Then the excitant effect of the salt is overbalanced by its depressant action, and a condition of hypochlorhydria is produced. For the same reason the dechlorhydration which improves the renal lesion improves the gastric, and this explains why dechlorhydration diminishes the hypochlorhydria. Enriquez and Ambard (Semaine médicale, August 28, 1907; New York Medical Journal, October 5, 1907).

OBESITY, GOUT, AND DIABETES MELLITUS.

Glycosuria, as well as well-marked diabetes mellitus, depends in the last analysis upon a defect of the biogens; that is, of the protoplasm, which, however, at the present time cannot be more exactly defined by either microscopical or chemical examination. This defect is known, however, from the effects it produces, *i.e.*, from the influence exercised by the diminished capacity for oxidation. Experience teaches that the latter may not only be transmitted by inheritance, but often may coincide with neuropathic tendencies peculiar to some families. The greater is this deficiency of the protoplasm, the earlier and the stronger is its disturbing action in otherwise similar circumstances; at the same time, even a less strongly expressed diabetic tendency may become of import when accidental causes, the so-called predisposing movements, give impetus to its action, contributing in their own way to the damage of the protoplasm.

The rôle of the pancreas in the origin of diabetes mellitus is believed by the writer to be as follows: Because of the failure of its function as a detoxicating organ, the cells of the body are injured in such a fashion that they become less active in function, and only serve the ends of internal respiration in a defective manner. The individuals thus affected then fall a prey to all the consequences of this condition. In his opinion, diabetes mellitus is not a symptom of the disease of the various organs, but is a disease *sui generis*, the first cause of which lies in a deficient character of the protoplasm; that is, transmissible by inheritance. In consequence of this defect there arises the anomaly of the carbohydrate metabolism present in this disease. If obesity, gout, and diabetes mellitus may thus be called diseases of cell metabolism, dependent primarily upon a defect of the cells, then it becomes at once clear that each

one of them may be traced to changes in the biogens different in localization and in character. That these three diseases are, nevertheless, closely related to each other is no less plain, two of them and sometimes all three of them affecting one individual simultaneously. The writer states that we are far removed at present from being able to imagine satisfactorily the intimate relations between these three diseases seen in this connection. Wilhelm Ebstein (Medical Record, September 28, 1907).

OPSONIC INDEX, UTILITY OF.

The phagocytic index is, as a rule, directly proportional to the strength of the bacterial suspension, which, in all cases where consecutive comparative studies are to be made, should be standardardized by definite enumeration of the bacteria pro cubic millimeter. Opsonic indices dependent on the supernatant suspension of bacteria, following mere centrifugation and the bacterial suspensions obtained by standardization with McFarland's "nephelometer," are fallacious.

For a certain time phagocytosis is directly proportional to the period of incubation. After this time degeneration of the leucocytes renders a trustworthy determination of phagocytosis impossible. Phagocytosis does occur at room temperature, but incubation at 37° C. (98.6° F.) for most bacteria is more conducive. Spontaneous phagocytosis or mere adhesion of bacteria to leucocytes may be a factor in the production of erroneous opsonic indices. In any event, opsonins do not appear to be the sole agents concerned in the ingestion of bacteria by leucocytes.

Not fewer than 100 leucocytes should be counted in estimations of phagocytosis, and these enumerations should include large lymphocytes and transitionals as well as polymorphonuclears. In short, the higher the leucocytic count the truer the index. Maintenance of body temperature during the process of technic seems to influence beneficially the phagocytic index. Sudden fall of temperature acts conversely.

The inconsistency of the phagocytic index for normal individuals is apparently confirmed by the unreliability of the opsonic index for pathologic cases. Aging of bacterial cultures (six to twenty-four hours) seems not to affect materially the phagocytic index. Knorr states that the opsonic power of the serum is diminished one-half in twenty-four hours, and that after forty-eight hours there is a gradual diminution, complete loss occurring after five days.

Aside from the technical difficulties, the question of personal equation involved in opsonic determinations is so serious as practically to nullify the value of the method in most instances. Simon's percentage index is apparently of more value from the practical standpoint than Wright's phagocytic index, because of its relative constancy and comparative ease of determination. The experiences of the majority of observers indicate that the diagnostic value of the opsonic index is minimal.

The consensus of opinion favors the belief that, prognostically, some utility attaches to the opsonic index, especially in the field of tuberculosis and in the laboratory, where it can be applied to test the virulence of organisms and the strength of sera whose value depends on opsonins.

In the heralded unlimited field of therapy, where the opsonic index is ordained to play a star rôle, its utility seems destined to pass into oblivion, not only because of its inconstancy in agree-

ment with the clinical symptomatology, but especially because of its impracticability. B. A. Thomas (Journal of the American Medical Association, October 12, 1907).

PANCREATITIS AND FOCAL NECROSES.

"Focal necroses" are found in the pancreas in many acute intoxications: pneumonia, septicæmia, peritonitis, typhoid fever. The same necroses are present in acute diffuse pancreatitis and in many cases of fat necrosis and hæmorrhagic pancreatitis. It seems probable that these necroses are factors which predispose to pancreatic fat necrosis and hæmorrhage. Chronic diffuse pancreatitis and icterus as well are important predisposing factors. "Focal necroses" and acute diffuse pancreatitis may be the etiological factors in some cases of chronic diffuse pancreatitis. A moderate degree of cirrhosis of the pancreas is a common finding at autopsies, the islands of Langerhans, however, being rarely involved. G. H. Whipple (Johns Hopkins Hospital Bulletin, September, 1907).

PELVIC INFECTIONS, TREATMENT OF.

Pelvic infection is a destructive process, sometimes causing only mild disturbances and sometimes causing death with or without provoking a marked inflammatory reaction. Pelvic inflammation is a protective process which may or may not save the life of the patient, according to the inflammatory reaction, and has no power of self-extension, but tends rather toward repair.

Puerperal infections are usually due to the introduction of bacteria during or after delivery, but may be caused by the presence of germs in the vagina, cervix, pus-tube or ovary, appendix, bowel, or peritoneum, during delivery or the puerpera. With the onset of puerperal infection all stitches should usually be removed and vagina and uterus determined free from foreign material with as little damage to the linings of these organs as possible.

During the acutely active stage of a pelvic infection the patient should usually receive no operative treatment until it may be determined that drainage or removal of some organ will remove or decidedly lessen the source of infection. Then drainage, removal of the uterus, tube, or ovary may be indicated. The removal of acutely inflamed pelvic organs is not indicated for the inflammation *per se*.

Non-puerperal, non-operative, acute infection is usually, but not universally, of gonorrhœal origin. An acute primary infection of the tubes and ovaries should be treated conservatively in the beginning, to save these organs. During an acute attack of infection, if the patient is not doing well, drainage may be performed to hasten convalescence or save the life of the patient.

Chronic pus-tubes should be removed. Immediately upon the onset of an acute infection in chronic pus-tubes, a radical operation may be advised, but should this be delayed until infection is distributed through the pelvis, drainage is more desirable if operation becomes necessary. Two safe operations are always preferable to one dangerous one. A radical operation should aim to make the least possible traumatism to tissues that are to be left, and cause the least possible distribution of infected material. To that end the writer commends the technique described by him, of severing the tube from its broad ligament and uterine attachments before a forcible effort is made to lift it out of the

cul-de-sac. C. W. Barrett (Annals of Gynecology and Pediatry, October, 1907).

PERITONITIS.

The term peritonitis is a misleading one, in that it is not the mere inflammation of the peritoneum that is dangerous. This inflammation is in itself often exceedingly beneficial and protective. But peritonitis is dangerous in proportion as it is associated with absorption from the peritoneal cavity. It is the absorption of toxins from the peritoneal cavity, not the inflammation of the peritoneum, that is dangerous. The peritoneal cavity is a vast lymphatic space from which absorption of toxins readily takes place. In the great majority of cases of peritonitis the causative bacteria are introduced into the peritoneal cavity from within by passing through the wall of one of the hollow abdominal viscera—the appendix, the intestine, stomach, gall-bladder, Fallopian tube, etc. Not uncommonly the poisonous contents of the viscera are introduced through a visible opening in the wall of the viscus—so-called perforative peritonitis. In appendicitis the amount of septic material escaping into the peritoneal cavity is usually quite small—perhaps only a drop or two—as the perforation of the appendix is usually preceded by adhesive inflammation of its lumen, shutting off its cavity from that of the cæcum, so that all that escapes is what is in the appendix at the time of perforation. In cases of fulminating appendicitis there is either a previous distention of the appendix with foul septic fluid, or the sudden rupture of an abscess that has slowly and quietly formed outside of the appendix and which ruptures secondarily. But where a large, hollow viscus like the stomach or cæcum is perforated, there is rarely any preceding adhesive inflammation, the perforation occurs suddenly, and is immediately followed by the pouring out into the peritoneal cavity of a vast quantity of septic material. There is usually a sharp, severe pain, limited at first to the site of perforation.

The peritoneum is normally insensitive to mechanical injury, but is very sensitive to the application of irritant poisons such as septic material. Sudden, severe, and persistent pain, accompanied by tenderness and rigidity of the abdominal muscles, is often sufficient for the diagnosis of perforation of the stomach. Nausea and vomiting usually follow soon afterward, but it is not necessary or desirable to wait for the later symptoms of elevation of the temperature and increased frequency of the pulse, as these latter indicate septic absorption, which it is desirable to forestall. Elevation of the pulse is much more important than a rise of temperature.

As regards the effusion of serous fluid into the peritoneal cavity, while blood-serum is bactericidal, yet the bactericidal power of serous fluid diminishes in the immediate neighborhood of an infected area. Consequently its letting out by operation leads to the effusion of fresh, more strongly bactericidal fluid. The particular bacillus most often causing peritonitis is the colon bacillus. Of late undue stress has been laid upon the quality of the bacteria and too little upon the quantity of the poison. The severity of the attack depends chiefly upon the latter quality.

Operation in cases of peritonitis does two things only: (a) by closing a perforation or removing a septic focus, the further entrance of poison into the

peritoneum is prevented; (b) to a limited extent the poison already within the peritoneal cavity is removed. But operation cannot remove from the blood the poisons, bacteria, or toxins already there. This must be done by encouraging the excretory powers of the kidneys and other organs by the administration of fluid.

For purposes of treatment, the writer divides all cases of peritonitis into four classes: (1) Those in which there is no perforation of any viscus and no collection of fluid in the peritoneal cavity. The amount of poison here is very small, and the best form of treatment is free purgation by salines and the administration of large quantities of fluid either by the mouth, the rectum, or into the subcutaneous tissue of a vein. Opium should be avoided. It may be desirable to drain the peritoneal cavity if there is any evidence of the accumulation of free fluid. (2) Those in which there is a recent perforation of a hollow viscus. Here an immediate operation should be performed, with the object of closing the perforation and preventing further extravasation into the peritoneal cavity. The sooner the operation, the better. Here it is prevention rather than cure of peritonitis that is aimed at. The less that is done to the peritoneum by washing or sponging the better, free drainage being the best means of getting rid of the extravasated septic material. Purgatives should be avoided and nothing given by the mouth, with the exception of water. (3) The great majority of cases of appendicitis. Most of these will improve and pass into a more favorable condition for subsequent operation, if not interfered with by operation at the very beginning. Purgatives or large enemata should never be given, nor any food or fluid by the mouth. The patient can very well do without food for a day or two. The thorax should be considerably higher than the pelvis, in order that any fluid may gravitate to the latter position, where it is more easily dealt with. (4) Cases of general diffuse peritonitis, with general distention of the whole abdomen and purulent fluid diffused over a large portion of the abdomen. The writer thinks the Ochsner method of treatment the best, *i.e.*, immediate radical surgical intervention, freely opening the abdominal cavity, breaking up all adhesions, opening all pockets, and thoroughly irrigating the entire peritoneum. For the very worst class of cases the Murphy method is undoubtedly good; this consists in making a small opening in the abdomen, closing the perforation or removing the appendix, the introduction of a large drainage tube into the pelvis, placing the patient in a sitting posture of from 35 to 45 degrees, and the administration of a quart or two of saline solution every two hours by rectum. The writer is opposed to indiscriminate immediate operation in appendicitis, and thinks that the method of treatment of twenty-five years ago gave a lower mortality. J. Berry (Lancet, September 7, 1907; New York Medical Journal, September 21, 1907).

PNEUMONIA, HEART-CLOT IN.

The question of cardiac thrombosis in pneumonia is still somewhat undetermined, the pathologists finding it very rarely and believing that it causes death only occasionally. Experimental medicine shows that it may be produced in animals, and clinical records are quoted to show that its occurrence in human beings is well authenticated. That it occasionally occurs in diphtheria is un-

questioned, especially in those cases in which pneumonia is present as a complication. With the heart-clot there is usually pulmonary thrombosis and occasionally pulmonary embolism. If in a given case of pneumonia the proper specific gravity and alkalinity of the blood are maintained, the crisis of the disease is precipitated by the continuance of high temperature, which tends to destroy the pneumococcus. This suggests the treatment of the disease with salines. It may be administered in the form of a refrigerant drink, to which citric acid should be added. Venesection is believed to be efficient in certain cases, and this should be followed by saline infusion. Ammonium carbonate or the aromatic spirit of ammonia should also be given at frequent intervals. B. Robinson (American Journal of the Medical Sciences, September, 1907).

POST-OPERATIVE ILEUS.

Acute post-operative ileus to a degree necessitating secondary operative interference is a most serious condition. In spite of every care in technique at the time of the primary operation, it not infrequently occurs. The classical signs of obstruction are obscured or are so modified by the usual post-operative sequelæ as to be misleading. It may present simply the appearance of a general inertia of the intestines and inability to relieve themselves of accumulated fluids and gases, or it may appear to accompany the development of a somewhat generalized peritonitis. Involving, as it does, the small intestine, the persistent vomiting, especially after apparently satisfactory results from enemata, more pronounced distension, increased rapidity of the pulse (even with a normal or subnormal temperature), after the first twenty-four hours, should be looked on with suspicion.

If, in spite of persistently applied treatment, relief is not soon obtained, secondary interference is indicated. The treatment should consist of reopening the original incision, puncturing and emptying distended, small intestine, and closing the multiple punctures, after emptying, by sutures. When this is necessary, in addition to drainage of the peritoneal cavity, a tube should be tied in the cæcum or ascending colon to provide further drainage of the intestines and to afford an opportunity for after-treatment. It is impossible to clearly define the indication for this treatment, but it will be found a life-saving procedure in cases which are ordinarily classed as hopeless. F. D. Donoghue (Journal of the American Medical Association, October 12, 1907).

POST-SCARLATINAL AFFECTIONS, THEORY OF.

A number of cases are reported by the writer to show that post-scarlatinal nephritis and lymphadenitis never develop before the twelfth day and may not appear until the sixth week, the average being in the third and fourth weeks of the disease. They usually come on together, although the adenitis may appear alone. He has also observed a number of cases in which there was a period of remittent fever of sudden onset and of undiscoverable cause, at corresponding periods; also endocarditis, rheumatic affections, and relapses of the scarlet fever or scarlatinal sore throat—all occurring at about the same interval after the first symptoms of the disease, almost always in the third or fourth week. The writer believes that the primary agent of the scarlet fever is checked in its proliferation in the

course of the self-limited disease, but that, after a time, the organism becomes less resistant or ultra-susceptible, so that the primary agent still lurking in the tissues is able to commence to proliferate anew, causing a new series of symptoms of infectious or toxic nature, or there may be reinfection from without. By the end of the second week, in scarlet fever, a period of specific predisposition for post-scarlatinal affections sets in, which lasts up to the seventh week. The greatest tendency to the flaring up of the scarlatinal process is displayed in the third and fourth weeks, after which it rapidly subsides. A similar period of ultra-susceptibility has been noticed in typhoid fever and also in serum disease. B. Schick (Jahrbuch für Kinderheilkunde, Supplement, 1907; Journal of the American Medical Association, September 28, 1907).

RADIUM, SPECIFIC ACTION OF.

The writer believes that radium ranks, not with caustics, cautery, antiseptics, or medication, but with specifics. This does not mean a "specific" for cancer, in the popular sense, but for erratic cell-growths constituting some types of tumor tissue in the earlier stage of invasion, or of moderate development. Details of the methods of using it have not yet been fully worked out. The dosage, so to speak, or time of exposure necessary for curative action, is as yet empirical. Some apparent cures of small epitheliomas or sarcomas have endured already more than three years. A photographic plate provides a good test to show the working force of an unknown specimen, in comparison with one of standard strength. It is not entirely a mysterious force, but, in part at least, is an electric discharge, essentially of negative elements. Hence, as far as it is possible to say, it suggests a theory of its action, in that it may supply an element of electric force vital to normal and orderly growth, the loss of which may have caused a disorderly cell-growth which, in the aggregate, constitutes tumor masses. It is supplementary to Roentgen rays, and, in some cases, is efficient where they fail. The overaction of strong radium is destructive and vitiates the benefit of moderate use. The best results have followed one hour's exhibition of the working unit (10 mgr. R. Br.) on small growths, and three to four hours on larger ones, with an interval of one month for study of the effect. Ischæmia of the parts during treatment greatly enhances its action.

Pigmented moles, melanotic growths, and giant-cell sarcoma, like epitheliomata of the eyelids, face, and body, are particularly susceptible to its curative action as a specific agent. But its value in nevoid and angeiomatous tumors is due to its irritant action, producing obliterating endarteritis and fibroid changes. Robert Abbe (Medical Record, October 12, 1907).

RETRODISPLACED GRAVID UTERUS.

Although pregnancy may be a means of correcting some cases of retrodisplacement, each case of pregnancy and each case of retrodisplacement has added clinical significance when the two conditions are combined. With the onset of pregnancy a retrodisplaced uterus should be returned to normal position as soon as possible, and supervised during the early months of pregnancy. An irreducible retrodisplaced gravid uterus may be given time to raise out of the pelvis with growth if

symptoms of early or late incarceration do not present. An irreducible retrodisplaced gravid uterus that shows early symptoms of incarceration which might lead to abortion, or late incarceration, with its attendant evils, should be replaced by means of a cœliotomy; the complications should be dealt with, and a radical operation should be performed to permanently cure the retrodisplacement. Cases of late incarceration may be met in which gangrene, septicæmia, peritonitis, uræmia, etc., may contraindicate cœliotomy for replacement and in which drainage of the bladder, drainage of the peritoneum, emptying of the uterus, or hysterectomy may be indicated. The latter cases, now uncommon, will be rare indeed if the former teaching is generally accepted. Careful cœliotomy will seldom be the cause of abortion, but abortion will sometimes follow the operation as a result of the incarceration. This, instead of contraindicating an operation, points to the necessity of earlier operative measures. This earlier resort to operative treatment appeals to the judgment of the patient and the physician when it can be shown that a radical cure of the displacement and its complications is feasible. C. W. Barrett (New York Medical Journal, October 5, 1907).

RHEUMATISM IN CHILDREN, ACUTE.

The author refers to the remarkable recognition of fever in childhood that has distinguished professional opinion in recent years, and also to the conspicuous difference in the picture of acute rheumatism in the child, as compared with the adult. The escape of the joints in early life and the association of chorea as a rheumatic event are noted. There is no absolute and admitted criterion by which diagnosis can be assured in the individual case. The greater prevalence of heart disease with the rheumatism of childhood is believed by the author to be partly explained by the relative escape of the joints permitting the child to continue long after the painful polyarthritis of the adult has enforced complete rest. It is urged upon the profession to impress on the guardians of children the need for complete rest, to obviate organic cardiac trouble.

The following facts are emphasized by the writer: The occasional development of a relatively severe inflammatory attack, limited to a single joint, and the restriction of evidences of inflammation —pain, tenderness, and redness—to the joints of the fingers and toes may both be regarded as a guarantee of cardiac valvular disease. His own experience prompts him to the use of salicin in moderate doses; also of the organic salts of potassium or sodium, pushed to make the urine alkaline, and combined with quinine, two grains in doses, especially when temperature is subfebrile and pains are vague and generalized. C. O. Hawthorne (British Journal of Children's Diseases, August, 1907; Journal of the American Medical Association, October 12, 1907).

RHEUMATOID ARTHRITIS, TREATMENT OF.

Rheumatoid arthritis has been treated for the last six years by the writer with counter-irritation of the spine by means of blisters applied to the neighborhood of the cervical and lumbar enlargements, and has found it useful. This plan of treatment is based on the fact that clinical observation has taught that injuries to the spinal cord, or even to the nerves of a limb, will set up arthritic changes which cannot readily be

distinguished from those seen in the earlier stages of rheumatoid arthritis. The changes in the joints and the muscular wasting are due to irritative and destructive lesions located in the spinal cord and especially in the cervical and lumbar enlargements. This is Latham's theory, and while the author thinks rheumatoid arthritis to be due to a cerebrospinal toxæmia, yet treatment based on these views has given good results. W. J. Midelton (Lancet, September 28, 1907).

SALPINGITIS CAUSED BY APPENDICITIS.

Two cases of salpingitis are reported by the author, due to disease of the appendix, and he calls attention to the fact that such cases occur and are more frequent than is generally supposed. He was able not only to observe the appearance of the diseased organs, both before and after removal, but also to note clinical and pathological differences existing between these cases and those of the more common gonorrhœal origin. The gonorrhœal diplococcus tends to close the fimbriæ and to protect the peritoneum until the tubal mucosa has been destroyed, and perhaps rupture occurred. Streptococcic and staphylococcic infection, on the other hand, causes lymphatic and connective tissue invasion. In one of the writer's cases the colon bacillus was present, indicating intestinal origin of the disease. Unfortunate mistakes in diagnosing the gonorrhœal salpingitis have occurred because of the non-recognition of the possibility of this other route of infection. I. S. Stone (Journal of the American Medical Association, September 21, 1907).

SYPHILIS, CONGENITAL.

Congenital syphilis is frequently seen and is a decidedly fatal disease if allowed to go without treatment. If symptoms of this disease are not present at birth, they generally appear during the first month (second and third month being next most frequent). Nasal catarrh, or snuffles, is one of the most frequent symptoms. The joints in congenital syphilis are rarely affected in infants under one year of age, although syphilitic phalangitis (so-called dactylitis) is fairly common. It is not safe to make a diagnosis of congenital syphilis from the glands alone. Evidence is accumulating in favor of the spirochæta, discovered by Schaudinn, as the real cause of syphilis. W. B. Jennings (New York Medical Journal, October 5, 1907).

THYROID AS A FACTOR IN CHRONIC URTICARIA.

It is claimed by the writer that chronic urticaria should be classified as a curable disease, and in connection with its treatment he makes a plea for a more thorough study of thyrotherapy. He firmly believes that in many cases of chronic urticaria, thyroid extract is a specific. He claims that disorders of the thyroid gland are the cause of many toxæmic conditions, and that thyroid extract is an autotoxin; hence its usefulness in toxæmic conditions, urticaria chronica included. Chronic urticaria is more frequent among women than men, and the fact that functional thyroid disorders are also more common in women has led the writer to believe that functional disorders of the thyroid are the cause of chronic urticaria. The author regrets that thyrotherapy has been neglected in the treatment of skin diseases, and points to the fact that remedies useful in chronic urticaria are also useful in functional disorders of the thyroid gland. Outside of the eruption,

the writer claims, the symptoms of chronic urticaria are almost the same as in thyroid toxæmia. M. L. Ravitch (Medical Record, October 5, 1907).

TUBAL GESTATION, EARLY DIAGNOSIS OF.

A simply presumptive diagnosis of ectopic gestation may be based on the two distinct items of colics and atypical menstruation. If we would know what constitutes an atypical menstruation for any particular individual, it is absolutely necessary to obtain definite information regarding not only the present atypical or alleged menstruation, but also of the menstruation preceding it for a term of three or four months. The nature, duration, and character of the earlier menstruations must also be learned, and the ordinary intervals from the beginning to beginning. Inaccurate history-taking will lead to incorrect presumptions, if not also to faulty and incorrect diagnoses. Forty-nine out of every fifty cases of tubal gestation present symptoms whereby the condition can be diagnosticated with reasonable certainty before the tragic stage is reached. Probably forty-five out of every fifty patients consult a physician in the non-tragic stage of the disease.

So soon as diagnosis is made operation is indicated, and the writer believes that the best interests of the patient will generally be subserved by immediate resort to operation, whether the patient exemplifies the non-tragic or tragic stage of the disease. In dealing with women in the non-tragic stage advice to them should be governed by the knowledge that from one-half to two-thirds of all cases of ectopic gestation, uninfluenced by operation, eventuate in death, and that if all patients are promptly and properly operated upon, ninety-nine out of every one hundred should recover. P. A. Harris (Journal of the American Medical Association, September 28, 1907).

TUBERCULOSIS, INTESTINAL INFECTION AND.

As the result of a study of many cases of tuberculosis, acute miliary, subacute, chronic, and local, the writer concludes that the tubercle bacillus cannot pass from the intestine through the lacteals, mesenteric glands, and thoracic duct into the lungs without leaving some record of such passage. Under favorable conditions a few bacilli may be swept along this course to the lungs, but the majority certainly will lodge in the glands, and in time cause a tuberculous process which can be recognized. When the mesenteric glands are not involved, the intestinal tract may be excluded as the portal of entry, but the converse does not hold for the tuberculous mesenteric glands, which may be secondary to some pulmonary focus that is discharging tubercle bacilli into the alimentary tract. The thoracic duct is often the distributing agent in cases which show scattered tubercles in the viscera and tuberculous mesenteric glands. G. H. Whipple (Bulletin of the Johns Hopkins Hospital, September, 1907).

TYPHOID FEVER, SUDDEN RISE OF ARTERIAL TENSION IN.

When in the course of typhoid fever a sudden rise in arterial tension takes place, accompanied by a galloping cardiac rhythm, a rapid aggravation of the patient's general condition is to be feared. As a rule, in typhoid fever the blood-pressure is very low. In four cases recently seen by the authors, the intestinal hæmorrhage and perforation

were preceded directly by sudden rises in arterial tension. This heightened tension is, however, very transient, being followed by a phase of low tension, with a threadlike and very rapid pulse. In the four cases the authors had noticed slowing of the pulse, with a rise of tension and a *bruit de galop*. These signs were invariably followed by hæmorrhage or perforation, which in their turn were quickly succeeded by a sudden fall of tension and a quickening of the pulse-rate. The cardiac sounds heard in these cases were a bruit following the first sound, and produced to all appearances by the contraction of the ventricle being accomplished in the action to overcome the peripheral resistance; the cardiac muscle stopping short in its contraction, not relaxing, but remaining for a moment stationary, and, as it were, breathless, seemingly taking breath before completing the systole, and so accomplishing that by a double action.

Whatever may be the accepted interpretation of the modification of the first sounds, the authors are sure that it is not the doubling of the second sound which Hayem noticed in typhoidal myocarditis, and which would be a sign of weakness of the cardiac muscles, as is witnessed by the increased arterial tension which accompanies it. The increased arterial tension observed in the cases was not due to any accompanying myocarditis. Nor was it due to an increase of temperature. Is it due to reflex action starting from the intestines under the influence of the aggravation of the lesion? It is allowable to think that either the sudden rise in arterial tension is a reflex phenomenon, produced in the walls of the blood-vessels by the aggravation of the intestinal lesions, or that the state of vasoconstriction is due to an increased virulence of the bacillus of Eberth, the toxins being thrown upon the system in greater quantity. Vulpian says that the vasomotor apparatus is always active, and never at rest, so that the walls of the vessels are always in a state of semi-contraction. Sharp pain to the surface can cause constriction of the blood-vessels all over the body. It may be possible that the ulceration of a Peyer's patch can do the same. But this toxic origin is also very doubtful.

In typhoid fever the heart should be regularly examined, as myocarditis is a frequent complication. The pulse gives valuable information, both rate and tension being important factors in forming a prognosis; arterial hypertension plays a large part in the production of hæmorrhage of every description. Baxbarg, in 1905, demonstrated the following facts: That hæmoptysis in tuberculosis is brought about by a transient rise of arterial tension, and that prophylaxis of hæmoptysis consists in the treatment of the various causative factors in the increased tension, which are often unrecognized or unsuspected in the tuberculous patient. Huchard and Amblard (Revue de médecine, July 10, 1907; British Medical Journal, October 12, 1907).

TYPHOID FEVER, TREATMENT OF, WITH SPECIFIC SERA.

From a study of specific therapy in 130 cases of typhoid fever, the writer concludes that specific therapy, confined to the original disease, increases, apparently, the tendency of the disease to relapse. By therapeutical inoculation, however (Vaughan's non-toxic residue), continued into convalescence, the relapse in typhoid fever can be largely

eliminated. This statement is made with much assurance, but is, of course, subject to confirmation by observation upon a much larger series of cases. If relapses can be prevented, then it follows almost certainly that mild typhoid infections can be aborted. This study would show, furthermore, that to get the best results cases must be seen as early as possible in the infection, but an early diagnosis in typhoid is oftentimes impossible, and, for this reason, specific therapy suffers under a severe handicap. Anti-typhoid serum is no more effective than filtrates and residues and is infinitely more expensive. Typhoid filtrates may exert a powerful effect upon the clinical course of the typhoid process, their use being followed in many instances by chills or rise in temperature and pulse, these being followed in their turn, often times, by marked fall in temperature, pulse, and respiration, and a general improvement in the clinical picture. The nature of these reactions is still unknown. It is hoped that further study, especially that of the opsonic index, in connection with these reactions, may give valuable information concerning their nature. The non-toxic residue of the typhoid bacillus as prepared by Professor Vaughan seems to make the typhoid process longer, but milder. It is apparently very effective in the prevention of relapses. M. W. Richardson (Boston Medical and Surgical Journal, October 3, 1907).

Book Reviews

Surgery: Its Principles and Practice. In Five Volumes. By 66 Eminent Surgeons. Edited by W. W. Keen, M.D., LL.D., Hon. F.R.C.S., Eng. and Edin., Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Volume II. Octavo of 920 Pages, with 572 Text-illustrations and 9 Colored Plates. Per Volume: Cloth, $7.00, net; Half-Morocco, $8.00, net. W. B. Saunders Company, Philadelphia and London, 1907.

In the second volume of this system the list of subjects and their authors is as follows: "Diseases of the Bones," Nichols; "Fractures and Dislocations," Eisendrath; "Surgery of the Joints," Lovett and Nichols; "Surgery of the Muscles, Tendons, and Bursæ," Binnie; "Orthopædic Surgery," Lovett; "Surgery of the Lymphatic System," Garrish; "Surgery of the Skin," Fordyce; "Pathology of the Chief Disorders of the Nervous System, and Its Importance in Clinical Diagnosis," Spiller; "The Surgery of the Nerves and Surgery of the Spine," Woolsey; "Traumatic Neurasthenia, Traumatic Hysteria, and Traumatic Insanity," Dercum; "Surgery among the Insane and Surgery of Insanity," Da Costa.

One of the most noticeable features about this volume is the brevity with which some of the important subjects are treated. The consideration of caries and necrosis of bone is limited to one page. Such an important subject as tuberculosis of bone is disposed of in three pages, half of one of which is taken up with an illustration. The description of tumors of bone also appears brief, sarcoma being dismissed with less than a page of subject matter. Notwithstanding the fact that the text appears very much curtailed now and then throughout the volume, there still remains much to be commended.

The chapters on fractures and dislocations deserve note. While we cannot feel that the author has quite reached the high standard which usually characterizes his writings, we do

feel that any deficiency that might be in evidence in this direction is decidedly overcome by the number and quality of the illustrations. The possible deformities that might result from careless treatment of fractures, especially of the long bones, is clearly demonstrated. Much emphasis is also placed upon the fact that "the early and systematic use of active and passive movements, of massage, of hydrotherapy, and mechanico gymnastics cannot be too strongly urged in the treatment of para-articular and articular fractures."

The pathology of the diseases of the joints is briefly considered by Nichols, while the surgery of the joints is discussed to some length by Lovett. The illustrations in this chapter are fairly numerous and well selected.

While the chapter on the surgery of the muscles, tendons, and bursæ appears well written, it is hardly complete enough for a system of surgery. Some degree of haste is manifested in the discussion of the tumors of muscles, which subject is disposed of in little more than half a page.

Under the heading of orthopædic surgery appears quite a dissertation on Pott's disease, treating of its appearances, manner of examination, points of diagnosis, and the best means of treatment. Tendon operations are carefully considered, and also worthy of note is the discussion of club foot.

The author's classic description of the pathology of the chief surgical disorders of the nervous system and its importance in clinical diagnosis shows that he is clearly the master of his subject.

The chapter on traumatic neurasthenia, traumatic hysteria, and traumatic insanity, and the one on the surgery of the spine are well presented.

Beyond the general criticism of the whole volume there is little more to be said of the remaining chapters.—R. B. S.

TREATMENT OF THE DISEASES OF CHILDREN. By Charles Gilmore Kerley, M.D., Professor of Diseases of Children, New York Polyclinic Medical School and Hospital, etc. Octavo Volume of 597 Pages, Illustrated. Cloth, $5.00, net; Half-morocco, $6.50, net. W. B. Saunders Company, Philadelphia and London, 1907.

This book is a valuable addition to the rapidly growing subject of pediatrics, and by it the author has made the first substantial contribution devoted exclusively to the treatment of the diseases of children. As stated in the preface, the book is especially adapted for the use of the physician practicing general medicine. It is hardly complete enough for the specialist in pediatrics, as various therapeutic resources which have proven satisfactory in the hands of other pediatrists are not considered. The therapeutic measures advocated by Dr. Kerley are those which he has used himself and found successful, and for that reason the work is of special value. On the other hand, the book is hardly adapted for the use of the undergraduate; he could not be expected to master so fully the refinements in the treatment of this special branch of medicine.

The opening chapter is devoted to a general consideration of therapeutics in children, the care of the new-born, the nursery, the sick-room, and general hygiene.

In the chapter on nutrition and growth the author considers carefully the use of cereals in infant-feeding. He advocates the use of the cereal water as a diluent in the milk mixtures of infants over five to seven months old. Dr. Kerley says, "That boiled starch may be digested by the youngest and most marasmic infant has been proved under my own observations." He reports a series of experiments on the infant's capacity for starch digestion, which were carried out under his direction at the New York Infant Asylum. These experiments were carried out on sixty infants, some very young and delicate. Forty cases showed a good starch capacity, and nineteen an indifferent or poor starch capacity. He also proved by experiment the presence of a starch-converting enzyme or enzymes in the fæces of breast-fed

infants. He has reached the conclusion that the majority of very young infants have the ability to digest starch, and therefore cereal diluents should be added to the milk mixture in the majority of cases.

The book contains a valuable article on the delicate child, in which its feeding, baths, fresh air, sleep, the nursery, influence of climate, clothing, exercise, midday nap, entertainment, and education are all considered. The article is concluded with the surprising statement that "75 per cent. of all children do not get as scientific care and attention as regards the selection of food, housing, and exercise as do the calves and colts, the lambs and pigs, of any high-class stock farm. Is this because the child has no market value in dollars and cents?"

There is a complete chapter on gymnastic therapeutics, containing a description of Dr. Thompson's methods of treating certain deformities in children by exercises.

The concluding chapter of the book is devoted to a table of drugs and drug dosage, with the amounts for infants six and eighteen months, and children three and five years old. This list is complete, and contains many brief but practical suggestions.

The book contains seventy-one illustrations, all original reproductions of photographs, and drawings of apparatus, which are excellent.—H. C. C.

Books and Monographs Received

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"Polypoidal Overgrowth of the Inferior Turbinates." By E. Hamilton White, Montreal, Canada, 1907.——"Pathology of Adenoids and Adenoid Tuberculosis." By E. Hamilton White, Montreal, Canada, 1907.——"Description of the Present Methods of Instruction in Clinical Medicine in the Medico-Chirurgical College of Philadelphia." By Judson Daland, Philadelphia, Pa.——"Observations on Plague in India." By Judson Daland, Philadelphia, 1907.——"The Diagnosis and Treatment of Laryngeal Tuberculosis. Some Unusual Types. An Analysis of Fifty-three Cases." By W. E. Casselberry, Chicago, Ill., 1907.——"The Indications for Resection of the Middle Turbinal." By W. E. Casselberry, Chicago, Ill., 1907.——"The Prevention of Deformity after Infantile Paralysis by Recumbency during the Stage of Recession." By Adoniram B. Judson, New York City, 1907.——"Educational Democracy. Address Delivered at the Opening of the Seventy-seventh Session of the Albany Medical College, September 24, 1907." By Willis G. Tucker, Albany, N. Y., 1907.——"Addresses Delivered at the Opening of the New Jefferson Medical College Hospital, June 7-8, 1907." By William Potter, William H. Welch, J. Chalmers Da Costa.——"The Antiseptic and Germicidal Properties of Solutions of Formaldehyde and Their Action upon Toxins." By John F. Anderson, United States Public Health and Marine-Hospital Service, Washington, D. C., 1907.——"Yellow Fever: Etiology, Symptoms, and Diagnosis." By Joseph Goldberger, United States Public Health and Marine-Hospital Service, Washington, D. C., 1907.

From the United States Department of Agriculture, Washington, D. C.: "Annual Report of the Office of Experiment Stations for the Year Ended June 30, 1906," 1907.——"The Use of Suprarenal Glands in the Physiological Testing of Drug Plants." By Albert C. Crawford,

1907.——"Organization of the Bureau of Chemistry," 1907.——"Meat Supply and Surplus, with Consideration of Consumption and Exports." By G. K. Holmes, 1907.——"Dodder in Relation to Farm Seeds." By F. H. Hillman, 1907.——"Growing and Curing Hops." By W. W. Stockberger, 1907.——"The Waning Hardwood Supply and the Appalachian Forests." By W. L. Hall, 1907.——"Exports of Farm and Forest Products, 1904-1906, by Countries to which Consigned," 1907.——"Imports of Farm and Forest Products, 1904-1906, by Countries from which Consigned," 1907.——"Trade with Non-contiguous Possessions in Farm and Forest Products, 1904-1906," 1907.——"The Most Important Step in the Control of the Boll Weevil." By W. D. Hunter, 1907.——"Experiment Station Work, XLIII," September, 1907.

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Original Articles

Department in charge of J. MADISON TAYLOR, A.M., M.D.

ON THE PREPARATORY AND AFTER-TREATMENT OF GENITO-URINARY OPERATIONS.[1]

BY L. BOLTON BANGS, M.D.
NEW YORK.

THE experience of many years as a hospital surgeon, together with manifold observations in private practice, force me to the conviction that not enough time is usually given to preparation of the patient for operation. This does not apply to the many emergency cases which we are compelled to accept, and which, of course, are of necessity treated without preparation. Also, it is admitted that the demands upon the service of the hospital are so numerous, so constant, that we fall into the habit of hurrying the immediate treatment of patients, and of shortening their stay after operation in order that space may be provided for the waiting throngs. But the fact remains that many cases come to us in a state of physical debility, either from intemperance, over-work, or starvation, or all combined, whose prospects of speedy recovery could be vastly improved by sufficient and careful preparation for the contemplated operation. It should be remembered that the majority of our hospital cases are from the tenement-house population. The conditions under which these people have their being are well known to you. These conditions are deplorable, but they are under the control of social and economic laws which we cannot change. Our duty begins and ends with the physical disabilities for which relief is sought; but I am convinced that

[1] As read before the Genito-urinary Section of the New York Academy of Medicine, November 20, 1907.

the patient's economic value will be fostered, and, what is more, the death-rate reduced, by a thoughtful and systematic upbuilding of the body tissues prior to operation, and by judicious (it may be prolonged) after-treatment till the functions are made as nearly normal as can be.

In considering the records presented to us by the Doctors Mayo, of Rochester, Minnesota, I have been struck by the fact that their patients came from an entirely different population—the hardy, wiry, vital, farming population of the great Northwest, whose resisting powers and whose invulnerability of tissue had been increased by simple, out-of-door, fresh-air life. Surgical results on such patients ought to be better than ours. While giving them full credit for their splendid work as typical American surgeons, we may wonder at the present fashion of praising them so unboundedly; and when such a well-known and conservative periodical as The Outlook publishes an article laudatory of their achievements, it seems to me not ungracious to remind ourselves of the adverse conditions under which the hard-worked surgeons in congested cities have to do *their* work. Among such surgeons it is a common experience to observe the almost magical effect of a few weeks or days in the hospital upon even these patients of degraded tissue. And although we are unable to keep them till normal vigor is restored, we often see them, even after a short post-operative period, go out with richer quality of blood and with a cheerfulness of spirit which are in great contrast to the bodily and mental conditions with which they entered. Of course such improvement is the result not only of being relieved from the malady for which the hospital was entered, but of the better hygiene during the convalescent period. If this degree of improvement can be so easily gained, why not, when the circumstances will permit, take more time for the preparation of the patient, and especially for that which is oftentimes as important as the operation itself, namely, the after-treatment? I suggest these questions for your consideration, and beg leave briefly to present a few of the points which experience has taught me in my own special branch of surgery.

In genito-urinary as in all other departments of surgery, there are many simple operations which may be performed without any special consideration of the patient's condition; but it should be remembered that the excretion of urine is a paramount function, and that the vital function of reproduction affects certain activities of the brain, spinal cord, and heart. Hence the relations between the different organs essential to these functions, and between them and the general organism, are so intimate and so important, that every means should be taken to prevent any interference with these relations. The relation between the penis or testicles and the kidneys is not so apparent as

that between the latter and the urethra or bladder or both. But there is a distinct relation, perhaps slight and therefore overlooked, but nevertheless distinct. Nature is wise and generous in her provisions, and gives warning to those who will observe and heed. The response of the kidney to slight irritation of the penis is shown by the flux of urine which, in certain individuals, takes place during an attack of phimosis or paraphimosis or an attack of balanoposthitis. The retraction of the testicle which takes place during some lesions of the kidney, notably calculus, is another evidence. It is well to keep these relations in mind, for even in such a simple and common operation as that of circumcision, especially in the adult, I believe that a short preparatory treatment, in cases in which it is indicated, will prevent such an annoying complication as cellulitis, or such a serious one as gangrene, the occurrence of which latter I have found reported but have never observed. For gangrene to occur after such a simple operation there must be either gross faultiness in technique or some constitutional dyscrasia in the patient that might be detected in the preparation. For example: a patient will present himself for this operation at a time most convenient to himself, without being aware of the fact that he has a commencing focus of tuberculosis in one of his lungs or elsewhere, or a mild attack of balanitis.

If the patient has a commencing tubercular infection, some little time could be profitably employed in insisting upon such hygienic measures as may be indicated by the necessities of the individual. Any *local* inflammation, no matter how mild, should first be subdued. By so doing, time is saved in the long run.

The same principles should be applied when the ligation of a varicocele, or excision of a hydrocele, or castration is to be undertaken. Too often we perform these without any attempt at preparatory treatment, and indeed with very little consideration of the patient's other conditions. In regard to varicocele, experience has taught me always to examine the patient's heart and the condition of the kidney on the corresponding side. If a lesion of the heart be found, simple in character and one which would not neutralize the effect of any operation, a better result can be obtained, especially if the open operation is the one chosen, by putting the patient to bed for three or four days before the operation. This quiets the circulation, lowers the pressure in the veins, and aids the vital processes. If the kidney on the corresponding side is found to be pathologic, the operation should be deferred until the exact nature of the lesion has been determined.

Operations upon the urethra should, in my opinion, always be preceded by careful preparatory treatment, particularly in the cases of stricture. When

possible, topical applications to inflammatory areas and regulation of the bodily habits, especially as regards alcohol and tobacco, should be carried on until the urethra is in as healthy a condition as can be obtained in the presence of stricture. When I consider the deformities and loss of function which I have observed in patients who have come with a history of having been operated on during a subacute inflammation, I am confident in my belief that the convalescent period would have been milder and shorter, and the patient saved from serious complications, if careful, even prolonged, preparatory treatment had been instituted. Especially in cases of filiform stricture, and even in cases of apparently impassable stricture, such preparatory treatment as quiet in bed, with moist heat to the perineum, and, if imperative, suprapubic aspiration, will notably modify all the patient's conditions. Not infrequently, during this treatment, the permeability of the stricture will recur, permitting the preliminary introduction of a filiform bougie, which will render the steps of the radical operation comparatively simple. In all classes of urethral stricture the post-operative treatment is most important. In my opinion the so-called *"urethral splint,"* meaning a catheter through the whole length of the anterior urethra and fastened in place, is uncalled for after stricture operations. It is an irritant which not only provokes erections, but must, of necessity, interfere with the healing process, and tends to develop an inflammatory cicatricial process in the mucous membrane beyond the area of the incisions. Formerly it was much in vogue, till a better knowledge of the pathology of the urethra and more respect for the physiological relations of the genito-urinary organs, led to its disuse. Twenty or more years ago I succeeded a colleague in my tour of duty in a large general hospital, and found a patient, who had been operated upon by external and internal urethrotomy, with one of these tubes tied in his urethra, the penis in a constant state of semi-erection (engorgement), with bloody pus exuding from the meatus, and the patient in a state of constitutional irritation.

In the last Johns Hopkins Report it is mentioned in such a way as to lead one to suppose that it is still used as a matter of course, but it seems to me so antediluvian that I am surprised to learn of its use in these days. A perineal tube is all-sufficient; it rests the bladder, helps to drain the perineum, and protects the most susceptible wounds, those in the penile urethra, from septic absorption. Too frequent instrumentation after an operation upon the urethra is another form of irritant. If the condition of the patient warrants it, the full-size sound may be passed at the end of the first twenty-four hours. This done, no instrumentation will be needed for at least five or six days, in some cases not for ten days or two weeks thereafter. Meanwhile

the urethra should be kept aseptic by daily gentle irrigation and the urine maintained unirritating by proper ingesta and saturated with some urinary antiseptic, such as urotropin.

In this phase of the after-treatment, I am governed by the degree of cutting which has been required, by the tendency to hæmorrhage, and by the sensibility of the patient. The suggestion recently made by my friend, Dr. Swinburne, "that instrumentation in all cases should be deferred for two weeks after the operation," is, in my opinion, too general, and I believe that the better practice, the result of considerable experience, is stated in the foregoing paragraphs. After the immediate post-operative period the patient should be kept under observation, and the growth of a healthy mucous membrane encouraged by sexual hygiene and by gentle but efficient topical treatment of the urethra. In some cases indefinitely prolonged treatment may be necessary, especially when the stricture has been extensive, requiring an external incision and considerable cutting. I have had patients come periodically for at least two years after such an operation. In this period of time the degree of recontraction which is to take place will be appreciated and can be modified; and such other measures as may be necessary for the patient himself to carry on can be ascertained, the effects of these noted, and the patient properly and thoroughly instructed. It should be borne in mind that the principal object is to restore the patient's urethra to as nearly a normal state as possible. For this the mere division of the stricture does not suffice, but is only the first stage of the process.

When we come to operations upon the bladder and prostate, preparatory as well as after-treatment is most important. Consider the state of the prostatic whose bladder has been infected, or who has infected himself, sometimes years before presenting himself for operation. Pus, mucus, and often blood are present in the urine; the prostate is engorged with blood, and tender; sleep has been disturbed by the frequent and tormenting urinary desire; and the local conditions have so affected the general ones that life seems unsupportable. Very often also a mild state of sepsis is present, and perhaps a serious degree of renal insufficiency coëxists. In desperate cases, showing serious sepsis, kidney failure and exhaustion, some form of preliminary drainage (indwelling catheter or suprapubic or perineal incision) is of unquestioned value; but, unless emergency demands some form of immediate operation, the favorable results of the prostatectomy (if this be the operation in view) will be insured by first reducing the inflammatory and infectious conditions, without resorting to preliminary drainage. If the symptoms are serious, repose in bed, if not absolute, should be for several hours each day;

the diet should be modified so as to produce the greatest amount of nutrition with the least amount of activity of the kidneys; and gentle ablution and disinfection of the bladder and prostatic urethra should take place with systematic persistency. The irrigating fluid should be bland in solution, small in quantity (no more than two ounces being allowed to enter each time), and all instrumentation necessary for this purpose should be done in the most gentle manner. No strong solutions of nitrate of silver should be employed, because, if stone should also be present in the bladder, strong irrigating solutions, and *especially nitrate of silver,* aggravate the patient's condition and often torture him into one in which life is jeopardized. Nitrate of silver is one of the most useful of bladder disinfectants, but it must be in mild solution and used judiciously. For example, I have known a learned and excellent general practitioner to insist upon using in the bladder of a prostatic a solution of nitrate of silver which always left the old man howling and swearing with pain till misery and the morphine habit put him out of existence. When nitrate of silver in mild solution aggravates the patient's local condition, I am always suspicious of the presence of stone or of a neoplasm. On the other hand, if stone be suspected absolute repose in bed and the gentle use of weak antiseptics, like boric acid, will soon modify the symptoms so that a positive diagnosis may be made, and will materially benefit the subsequent operation. Even in mild, uninfected cases I insist upon some of these preparatory measures. A few days in bed prior to operation relieves the irritability of, and consequently weakened function of, the kidneys, quiets the portal circulation, with which the veins of the prostate are connected, and so modifies the symptoms that the risk of operation is reduced to a minimum.

It has been a very interesting observation to me to see the improvement which can be made in the condition of patients presenting themselves for the radical relief of prostatic obstruction, and who have come with serious bladder symptoms and with all the evidences of serious kidney lesions, including marked œdema of the lower extremities. By careful preparatory treatment cases which at the outset seemed hazardous and to demand a two-step operation, have became simple, have rallied from the operation quickly, and have made eventual though slow recoveries.

In cases of vesical calculus with mild symptoms and sterile urine, the relation between the bladder and the kidneys should not be lost sight of. Putting the patient to bed for at least three or four days prior to the operation is, in my opinion, absolutely imperative. This is a standing rule with me. The necessity for this was enforced upon me by having seen patients taken into hospital and operated upon the afternoon of the day of admission,

the operation being followed by an anxious time; and also by having known a patient to be permitted to walk a few blocks from his residence, then being operated upon by lithotrity within two or three hours after his return, and promptly dying. Whichever the operation chosen for the removal of the calculus, good judgment requires not only preliminary treatment in order to insure the safety of the patient, but it also demands careful after-treatment in order to restore local and general health. The removal of the stone is the first step in curing the patient's malady. The conditions which led to the formation of the stone have now become the principal consideration. The prevention of another stone is the chief object now in view. For this purpose the habits and diet of the patient require persistent attention, in order to modify the constitution of the urine; and the bladder itself requires careful treatment, in order to remove every trace of inflammation.

A very important part of the after-treatment of lithotrity consists in inspecting the bladder with the cystoscope and in a secondary pumping out of the bladder within two or three weeks after the operation. This is important in all cases, and essential in those in which there is a marked grade of cystitis. The latter causes a softened bladder-wall covered by masses of mucopus, to which may adhere a small fragment or particles of calcareous powder, which may serve as the nucleus of a new stone.

Operations upon the kidneys are always of such vital importance to the patient that good judgment must be used in the application of these principles. Exclusive of emergency cases, in which delay may be dangerous, especially in cases of anuria, preparatory treatment is very important. A suppurative process, with fever, leucocytosis, and marked debility, may demand immediate operation; but even in these cases I have seen judicious preparatory treatment ameliorate the patient's condition and render the operation free from hazard. Even in hæmorrhagic cases, sufficient preparatory treatment (repose in bed, etc.) will reduce the blood loss from a dangerous and debilitating one, to one so simple that the recuperative power of the individual is immediately restored and the convalescent period after the operation materially shortened. Moreover, the functional capacity of the normal kidney may be strengthened, and thus the vital resistance of the patient proportionately increased. One very striking case so impressed itself upon me several years ago that I now always, unless emergency requires immediate operation, prepare my patients even for some of the steps of the preliminary diagnosis. In some cases cystoscopy, with or without catheterization of the ureters, can be better undertaken after a period of rest in bed, dietetic regulation, and careful urinary antisepsis.

These suggestions are offered with the hope of impressing upon you my belief that better results and more speedy convalescence will be achieved, even among debilitated hospital patients, by careful preparatory and after-treatment of our operative cases.

THE BRADSHAWE LECTURE. ON THE PLEURAE: PLEURAL EFFUSION AND ITS TREATMENT.[1]

Delivered before the Royal College of Physicians of London, November 5, 1907.

By SIR JAMES BARR, M.D., LL.D., F.R.C.P., F.R.S.E.

Senior Physician, Liverpool Royal Infirmary; Visiting Physician, Haydock Lodge and Tuebrook Asylums.

Mr. President and Gentlemen:—We have met to-day to do honor to the memory of a distinguished member of this College, a memory which has been thus perpetuated by the foundation of this lectureship. Until recently Dr. William Woode Bradshawe was nothing more to me than a name, and even now I know very little more of his personality than what I have gleaned from some old medical directories, and from the first Bradshawe lecture, delivered by the late Dr. George Vivian Poore, August 18, 1881. By the way I find that the College has clipped the "e" off the gentleman's name, which I have now much pleasure in restoring to his memory. I might, therefore, be allowed to suggest to the members of the Censors' Board, or to some of the historians of the College, that they might usefully while away a little of their spare time in writing historical and fairly laudatory sketches of the benefactors of the College. This might encourage others to hand down their names to posterity accompanied by some substantial sums of money.

Whatever may happen in the future, it is to you, Sir, that I owe my selection, and to you I tender my best thanks for the honor which has been conferred on me, and for this opportunity of discussing a medical subject before such a distinguished audience.

The Physics of the Pleura.

I have chosen the pleura as my text for this lecture, and in doing so I am fully cognizant of the original work which you have done and the brilliant luster which you have shed, not only on the pleura, but also on all the diseases of the chest. The somewhat abstruse questions connected with the physics of

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[1] Published simultaneously by Sir James Barr in the British Medical Journal and the Monthly Cyclopædia.

the chest you have made clear, and your *schema* of the mechanism of the respiration and the circulation in the chest is the best with which I am acquainted.

Diseases of the pleuræ, and pleural effusion, have engaged my attention for years, and I think I may fairly claim to have taken some part in the recent advancement in their treatment. It would be absolutely impossible to do adequate justice to such an important theme in the course of one lecture, so I shall content myself with some practical points which I hope will give you something to think about. Perhaps I should first consider the significance which I attach to the word "practical," as different values are certainly associated with it, and the Britisher is especially apt to estimate its importance by the pecuniary results. Personally, I think every problem worthy of our attention should be probed to the bottom, and in my experience the so-called practical men are often the greatest bunglers, while the theoretical physician is the best practitioner; I am therefore anxious to link myself with the latter however much I may weary you with details, and no matter how unnecessary or impractical these details may be considered.

As you yourself, Sir, have rightly said,[2] "It would be impossible truly to comprehend the manifold incidents and conditions of asthma, emphysema, pleuritic effusion, and pneumothorax without a working knowledge of those statical and dynamical conditions of respiration in health," and therefore I need offer no apology for following such a lead. I must again quote from your expressive language[3]:—

"When we regard the position and connections of the pleura, its extensive endothelial surface, the conditions of negative pressure in which that extended surface is ever maintained, its richness in lymphatics (indeed the pleural cavities have, with other sacs of the kind, been regarded as lymphatic spaces), we cannot wonder that it should frequently become the seat of disease, nor that it should be one of the chosen sites for the manifestation of lesions from blood contamination. Few are the autopsies after adult age in which one fails to find some imperfections in the pleura, few are the cases of septic or pyæmic poisoning in which this membrane is not actively involved."

In addition to its rich supply of lymphatics, the pleura is a fairly blood-vascular membrane, which becomes very evident during an attack of pleuritis. The blood-vessels are distributed in the subserous layers. The arteries belong to the systemic system, and are innervated by the sympathetic nerves. The pleura pulmonalis is supplied by the bronchial arteries, and the pleura parietalis receives its supply from the internal mammary and the intercostal arteries.

[2] Diseases of the Lungs and Pleuræ, by Sir R. Douglas Powell, Bart. Fourth edition, 1893, p. 1.

[3] *Ibid*, p. 93.

The return current is carried away by the azygos veins. The valves in these veins are very imperfect, and hence when you get high venous pressure in the right auricle and venæ cavæ, such as arises in tricuspid stenosis, the pressure is transmitted back to the venous radicles in the pleura, and you are apt to get pleural effusion; this is especially likely to occur if at the same time there be a fall in the arterial pressure. The innervation renders the vessels very susceptible to the influence of adrenalin, and of course you are all aware of the use which I have made of this drug in the treatment of serous effusions.

In health there is a slight negative pressure in the pleura owing to the elasticity of the lungs, which even in expiration are in a state of elastic tension and therefore exert traction on the thoracic walls, and, as you have pointed out, there is a tendency for the thoracic walls to recoil in the opposite direction. I propose to enter rather fully into this subject, as it is, in my opinion, of much more importance in the treatment of pleurisy than a good many of the drugs in the Pharmacopœia. The following is copied from Starling's article in Schäfer's Physiology:—

"We have already seen that, even in conditions of expiration, the lungs are still in a stretched condition, and therefore exert a pull on the thoracic walls, until they are allowed to collapse by puncture of the wall. The amount of this elastic force has been measured by connecting a mercurial manometer with the trachea in the dead body, and then puncturing the thorax. Measured in this way it amounts to between 2 and 5 mm. Hg. According to Donders, however, this is less than the actual pressure in the living body, owing to a loss of elasticity by the lungs. Donders calculated the elastic pull of the lungs in the expiratory condition as about 7.5 mm. Hg. After an ordinary inspiration this is increased to 9 mm., and after the deepest possible inspiration to about 30 mm. It is evident that these figures also represent the negative pressure in the thoracic cavity under the same conditions.

"During ordinary respiratory movements there are slight changes of pressure in the alveoli and tracheal air. In inspiration the pressure in the trachea is from — 2 to — 3 mm. Hg, in expiration about + 2 mm. Hg. By connecting the closed trachea or air-passages with a manometer we may measure the total possible force exerted by the respiratory muscles in drawing air in or expelling air from the lungs. These pressures amount to — 30 to — 74 mm. Hg. in inspiration, and to from about + 62 to + 100 mm. Hg. in expiration (Donders)."

This is all very well as far as it goes, but, in my opinion, there are many little refinements necessary when making such observations in the human being. A good many of the recorded pressures would depend on the amount

of obstruction to the inflow and outflow of air through the tube in the trachea. The method which I adopt can be practiced by any one on himself without having a tube tied in his trachea. What is required is a little intelligent practice, so as to convert the mouth, the nares, and the intrapulmonary cavity into one aërial space having as nearly as possible the same pressure throughout. When taking the pressure in the cavity during oral breathing the mouth is open and the shut nares connected with a manometer. When the pressure is taken during nasal breathing, one or both nostrils are open, and the tube of the manometer lies in the shut mouth. In the observations it is absolutely essential that all respiratory movements be performed by the thorax alone, and that the mouth and nares be held in absolute repose. Any suckling or other movement by the mouth or nares destroys the uniformity of the cavity; of course, there is a second line of obstruction at the glottis, and the variations in pressure must be greater beyond the obstruction than in the mouth and nares, but this obstacle cannot readily be removed in the human subject. I give you the following observations made on myself, because I can vouch for their accuracy, and I think my lungs are still fairly elastic. I know many who would give a better record, and many who would give a worse. These, however, will suffice for the object I have in view. The lower pressures have been made with a water manometer, and the higher with a mercurial; as mercury is 13.6 times heavier than water, it is easy to convert the readings into water or mercury as you prefer.

Millimeters of Water.

1. Quiet oral breathing: insp. — 5 to — 8; exp. + 3 to + 5.
2. Deep oral breathing: insp. — 24 to — 34; exp. + 20 to + 30.
3. Quiet nasal breathing, 2 nostrils: insp. — 10 to — 16; exp. + 6 to + 10.
4. Quiet nasal breathing, 1 nostril: insp. — 16 to — 22; exp. + 12 to + 16.
5. Deep nasal breathing, 2 nostrils: insp. — 40 to — 60; exp. + 30 to + 40.
6. Deep nasal breathing, 1 nostril: insp. — 180 to — 200; exp. + 160 to + 180.

Müller's Experiment.—Expanding the chest after deep expiration with the mouth and nostrils closed, — 80 millimeters of mercury.

Valsalva's Experiment.—Forcible expiration with the mouth and nostrils closed after deep inspiration, + 100 millimeters of mercury.

If you follow the teaching of most text-books which deal with this subject you may infer that the elasticity of the lungs was a constant dragging force trying to separate the two layers of the pleura, and with such a constant force in action of even 6 millimeters to 9 millimeters of mercury one might naturally

expect to find some evidence of its existence. As a matter of fact there is no traction, but perfect equilibrium, as the elasticity of the lungs is counterbalanced by the intrapleural tension, which is equal in force and opposite in direction—the former is positive and the latter negative. The elasticity of the lungs tends to separate the pleural surfaces, and the intrapleural tension, which depends on the elasticity, holds them together. When the lungs are stretched in inspiration the elasticity is increased, and so also is the intrapleural tension by an equal amount.

In the maintenance of this intrapleural negative tension there is a factor in the elastic recoil of the chest walls which has been omitted or not clearly appreciated by physiologists, but which you, Sir, have plainly shown to exist, so[4] "that in quiet inspiration there is no inertia or elastic resistance of the chest walls to be overcome, but that on the contrary the thoracic elasticity is a reserve force of appreciable power constantly tending to enlarge the thorax, and therefore acting in favor of inspiration."

Moreover, owing to the comparative rigidity of the chest walls and the tension of the diaphragm, the external surface of the pleura is protected from the atmospheric pressure—it is like a membrane lying on the inner surface of a metal ball—and so the two surfaces of the pleura are pressed together, and both layers are pressed against the internal surface of the thoracic walls by the atmospheric pressure within the lungs.

The elasticity of the lungs and the elastic tension or recoil of the chest wall maintain a negative pressure within the pleura, or an intrapleural tension, equal in amount and opposite in sign or direction to that of the elasticity of the lungs, so long as there is no fluid in the pleura sufficient to overcome the elasticity, or as long as the pressure within the lungs, minus their elasticity, does not exceed the pressure of the atmosphere.

Let us take Donders's figures of 7.5 millimeters of mercury or 102 millimeters of water as equivalent to the elastic pull of the lungs during the expiratory period; therefore it would require a fluid pressure all around the lung equivalent to 102 millimeters of water, or a depth in the sac equal to this all-round pressure, in order to abolish the elastic pull of the lung. Any further collapse of the lung would be caused by an increase in the fluid without any positive pressure in the pleura except that of the liquid. When in pleural effusion the intrapleural tension becomes positive—that is, higher than the atmosphere—the lung must be completely collapsed. If the intrapulmonary pressure exceeds that of the atmosphere by 102 millimeters of water (a condition which exists in my chest during expiration through one nostril), then

[4] *Ibid*, p. 10.

the intrapleural negative tension is abolished, and any further rise in the intrapulmonary pressure would keep the surfaces closely glued together, so that the external layer of the pleura might be laid freely open without any risk of air entering the sac. We have seen that great intrapulmonary pressure only occurs when there is some obstruction to forcible expiration such as using only one nostril, or in Valsalva's experiment. It therefore follows that the best way to expand a collapsed lung is to increase the intrapulmonary pressure until you have restored the elasticity of the lung, and then increase the intrapleural negative tension.

Owing to these marvelous provisions of Nature the two lubricated pleural surfaces can move freely over one another, but any force which separates them must be greater than the atmospheric pressure in the lungs; during inspiration this is less than the atmosphere, and during expiration rather more. Moreover, the warming of the air in the lungs from 57° to 98° F. would make it expand about one-twelfth of its bulk, and this would increase the pressure in the alveoli. It thus takes at least an atmosphere (about 760 millimeters of mercury) to separate the two pleural surfaces, and when the surfaces are separated by fluid it must have been secreted at a greater pressure than the atmosphere. Thus any traction from the elasticity of the lungs can have no effect in separating the two pleural surfaces, but any effect is transferred to the walls of the thorax, seeing that there is often a difference of pressure on the two sides of the thorax. In the intact chest you never could lower the intrapulmonary pressure sufficiently to separate the two pleural surfaces, but in Müller's experiment you can lower the intrapulmonary pressure sufficiently to make its dragging effect readily felt on the walls of the thorax.

If you attach the smooth surface of a worn sixpence with a little vaseline to the bottom of a metal piston of a syringe the sixpence can be easily moved about over the flat surface of the piston, but even when the nozzle is down and the sixpence only suspended by the lubricant (the object of which is to get rid of the air between the piston and the sixpence), you can draw the piston up to the top of the syringe with the nozzle blocked, and thus make a large, though imperfect, vacuum without detaching the sixpence. You can thus see that the elasticity of the lungs is Nature's method for keeping the two lubricated surfaces close together and enabling them to move freely on one another, and not for separating them, as is often supposed.

Sir William Macewen, F.R.S., in his admirable Cavendish lecture on some points in the surgery of the lung,[5] says:—

"Experience shows that the lung is mantained in full expansion by the

[5] British Medical Journal, July 7, 1906.

molecular cohesion existing between the two serous surfaces of the pleura, and the capillary attraction exerted by a thin layer of serous fluid existing between the two moist membranes. Although this molecular force may not be considerable at any given point in the pleura, yet, when it is remembered that it is distributed over the entire surface of the periphery of the lungs, its cumulative effect is very great and amply sufficient for the purpose. . . . . Molecular cohesion is usually illustrated by the phenomena shown when two sheets of bright polished plate-glass are brought into intimate contact; they cohere, and the truer the surfaces the more perfect the cohesion. Not only do they hold one another together against the action of gravity, but in addition they sustain a considerable weight. This must be attributed to a reciprocal action between the two surfaces, and can have nothing to do with atmospheric pressure, as the experiment succeeds in a vacuum. When, however, the surfaces of the glass are moistened and they are pressed together the cohesion becomes more perfect, and the resistance to separation much greater. If, instead of using water, the surfaces were covered with some fluid whose surface tension was better adapted for the purpose, the cohesion would become still greater."

In the first place, I should like to add my meed of praise to this excellent lecture. It is the best paper on the subject I have ever read. His surgery is excellent, and, whatever be the forces at work, he recognizes the necessity of keeping the two pleural surfaces in close apposition. Where he sticks to facts there is no ground for complaint, but when he wanders from the region of fact into that of theory we must not allow even this great authority to stand between us and the truth.

He has got a very faint conception of what molecular cohesion really means, and his illustrations have nothing whatever to do with molecular cohesion, but are merely examples of surface tension and atmospheric pressure. The first essential for molecular cohesion is that the molecules must be in contact, and it is absolutely impossible for such contact to take place between two surfaces which are separated by a thin layer of fluid. A layer of less than a thousandth part of an inch in thickness would be quite sufficient to prevent molecular cohesion. Chemists and physicists may tell us that molecules are free to move about among one another, but in solid bodies they do not move very far, and contact is essential for cohesion. In the case of the pleura the surfaces glide over one another very easily, and the only difficulty is in the separation of the surfaces. If there were molecular cohesion all movement would be prevented, and the only thing approaching this condition is what Sir William Macewen calls compressive adhesion.

Professor Donnan tells me that the surfaces of two pieces of steel have

been cut so true that when they were brought into perfect apposition a much greater force than would be accounted for by atmospheric pressure was required to separate them. This is molecular cohesion; nothing like it occurs between any surfaces in the body. If you had molecular cohesion over such a large surface as the hip-joint, the junction would be so perfect that it would be much easier to smash the shaft than rotate the head of the bone the hundredth part of an inch.

Edward Weber reckoned the atmospheric pressure on the hip-joint at 20 kilos, about 44 pounds; but I think it must be rather more, as the average surface must be at least 4 square inches, which would give 60 pounds. However, a pressure of 40 pounds to 60 pounds would readily explain all the cohesion phenomena of the joint mentioned by Sir William Macewen.

It is quite conceivable that you might get molecular cohesion "when two sheets of bright plate-glass are brought into intimate contact," and in this case they would virtually become one sheet. It is, however, highly improbable that such necessarily true surfaces could be found in plate-glass; and, moreover, Sir W. Macewen says that when "the surfaces of the glass are moistened and they are pressed together the cohesion becomes more perfect, and the resistance to separation much greater." This at once disposes of the idea of molecular cohesion, and we have now to consider what holds the surfaces together. Sir William Macewen says:—

"Not only do they hold one another together against the action of gravity, but, in addition, they sustain a considerable weight. This must be attributed to a reciprocal action between the two surfaces, and can have nothing to do with atmospheric pressure, as the experiment succeeds in a vacuum."

Here, I am afraid, his experiment is at fault. It is not an easy matter to produce a vacuum, even with a Sprengel pump. The pressure of the atmosphere is roughly 15 pounds to the square inch; supposing you reduce the pressure by 14 pounds, there will still be 1 pound left to the square inch, and it is not often that you will get experimentally a more perfect vacuum than that. Under these conditions you have a pressure of 1 pound to the square inch plus the slight force of surface tension holding the lower plate close to the upper, and the influence of gravity dragging them apart. It is, therefore, simply a question of mathematics. If the weight of the lower plate plus the attached weight exceed 1 pound to the square inch, the plates will separate, otherwise they will remain in contact.

I have made a good many experiments on surface tension, and on the effects of atmospheric pressure, but I shall only trouble you with a few which bear on the subject which we are discussing. The surface tension of a serous

effusion having a specific gravity of 1025 will support about 6 grains to the square inch. A transudate of a specific gravity of 1010 will support about 3 grains to the square inch, while the normal thin serous fluid of the pleural cavity may be an excellent lubricating material, but its surface tension will not support more than 2 grains to the square inch; therefore, as a force in holding the two pleural surfaces together, it is scarcely worth computing.

I have referred to the experiment of the sixpence attached with a little vaseline to the bottom of the metal piston of a syringe. The same event occurred when I substituted a ¼-ounce weight and ½-ounce weight; but when I used a 1-ounce weight each of them dropped off when the vacuum exceeded a certain degree. The cohesion does not continue when the influence of gravity exceeds the atmospheric pressure plus the surface tension in the partial vacuum. To further test the force of the atmospheric pressure in holding surfaces together, I used different metal weights, and finally took a 56-pound weight, coated one of its rough surfaces with a layer of vaseline, and then laid on this a polished bookshelf. I then struck the bookshelf so as to drive out the excess of vaseline, and bring the two surfaces as closely together as possible. I steadily raised the bookshelf and the 56 pounds remained attached, and I thus carried it around the room. I next interposed a sheet of paper coated on both sides with vaseline between the weight and the bookshelf, and still the 56 pounds remained attached while it was thus carried about. In these experiments the two surfaces could be moved easily over one another. I do not suppose that any one will imagine that the surface tension of vaseline is capable of supporting 56 pounds; but to clear up any doubt in the matter I shall tell you of an experiment which, so far as I am aware, has never been carried out. Take a block of marble of 1000 pounds weight, having a perfectly smooth polished surface of about 1 square foot in area; the under surface must be rough, and rest on a hard, irregular surface, so that a column of air may be below the greater part of the under surface. On the smooth upper surface, spread about an ounce of vaseline; then apply a strong, rigid, perfectly-smooth metal plate of rather more than a square foot in size, strike the metal plate with a sledge-hammer so as to bring the two surfaces into close apposition. Then slowly and steadily raise the metal plate with a pulley, and the block of marble will follow it. If anything will show the force of the atmospheric pressure this should. You may ask me how I know that this experiment will succeed. I know that the atmospheric pressure is about 15 pounds to the square inch, and if you only oppose that with a weight of 7 pounds to the square inch you leave a good margin for the success of the experiment.

In punctured wounds of the thorax the pleural surfaces are often not

separated. The writer on intrapleural tension in Clifford Allbutt's System of Medicine says:—

"Where the wound is a small one and only a puncture, though the lung be injured the air as a rule does not find access to the pleura, but crosses the pleura and reaches the subcutaneous tissue. The reason of this is very difficult to find, but of the fact there is no doubt."

I do not know if any of you have encountered a man who was making indiscriminate use of a knife. I have, and for a short time I got the worst of the conflict. If you should meet such an individual you can deal with him as you think best; but if you find him making a lunge for your chest I would strongly advise you to let your breath out before he does it for you. In this way the knife or dagger has another inch to travel before it reaches your chest, and you establish a positive pressure within your thorax which prevents the two pleural surfaces from separating. After the injury keep the wounded side as much as possible in a state of expiration, and do not on any account take a deep inspiration.

I know a medical man who opened both pleuræ in a patient within a few days of each other for empyemata, and the patient recovered. I am afraid he did not know much about the elasticity of the lungs or he would not have shown such temerity. He thinks that the pleural surfaces were extensively adherent, and thus collapse was prevented. The increased intrapulmonary pressure during expiration tends to expand the collapsed lung and to obliterate the actual cavity.

Mr. Arthur Edmunds has recorded[6] some very interesting observations on a case of pneumothorax in a child when the chest was laid freely open. He also made many illustrative experiments on cats. In the child and also in the cats the respiration became triphasic.

"The first phase was an inspiratory effort; this filled the lung on the sound side with air; the lung on the affected side collapsed. The second phase was an expiratory effort, and during this time the affected lung was seen to fill with air, and to struggle in its effort to expand against the remaining bands of adhesions. The air which filled this lung was forced over from the healthy lung, as it was unable to escape to the exterior owing to the closure of the glottis. In the third phase the glottis opened, the expiratory effort continued, and air passed to the exterior from both lungs. The passage from the second to the third phase was marked by a distinct grunt. The three phases may be briefly termed inspiration, distribution, expiration."

When the air enters the pleural cavity from the lung the exit is usually

[6] *Ibid*, November 21, 1903.

not so free as the inlet, so the intrapleural tension, both in inspiration and expiration, becomes positive, and so the lung collapses, and does not get a chance of expanding again unless the perforation heal and the air get absorbed. After withdrawing serous fluid from the pleura I frequently produce an artificial pneumothorax, but I am careful not to produce any positive intrapleural pressure.

In cases of pleural effusion of course the pressure is as the depth of the liquid, but when the lung is free to float the intrapleural pressure does not become positive until the elasticity of the lung is overcome. The heart becomes somewhat displaced, as you, Sir, have pointed out, even before the pressure becomes positive, being drawn over by the greater negative pressure in the other side of the chest. Then with the further increase in the liquid the pressure becomes more and more positive and displaces the other organs. With the substitution of the fluid air for the liquid effusion you can more easily regulate the pressure. In empyema the pressure is frequently higher than in simple effusions, and when the tension is very high you may have the pulsations of the heart communicated to the liquid, giving rise to a pulsating empyema.

We have seen how the lung is kept expanded by the negative tension within the pleura, and the greater and more active the inspiration the greater the negative pressure, but not unfrequently, especially in many wasting diseases where the demand for oxygen is not great, this negative pressure may fall to a very low ebb or may disappear, so that partial atelectasis of one or both lungs, or almost complete atelectasis of one lung, is not at all uncommon. This is especially apt to occur in young, flat-chested individuals with pliant chest walls. Perhaps I have seen a greater number of these cases than has fallen to the lot of most men, for the simple reason that for many years I have been on the look-out for them. These cases are frequently overlooked because there is usually a negation of subjective chest symptoms, and so the lung is often allowed to remain so long collapsed that it never completely expands, and afterward the deficient expansion of one side of the chest is supposed to be the result of some old pleural effusion of which the patient has no recollection. When these cases are discovered in the early stages they are usually mistaken for pleural effusion—an error which is apt to remain uncorrected if an exploring needle be not inserted into the chest. I show you the skiagraphs of a couple of cases which were tapped in several places with a negative result, and afterward such diagnosis as sarcoma of the lung, unresolved pneumonia, etc., arrived at. My opinion that the conditions were simply due to atelectasis which could be removed by respiratory gymnastics was at first received with credulity, but the subsequent improvement in the cases and

the non-fulfillment of the grave prognostications proved the correctness of my views. I have seen this condition occur in typhoid fever, infective endocarditis, pyæmia, etc. In one severe case of typhoid fever an energetic consultant came to the conclusion that a mistake had been committed, and that he had to deal with a case of empyema, but he had to acknowledge his own mistake when he found the pleura quite empty. I had subsequently the opportunity of explaining the correct nature of the condition, which in this instance was cured by making the patient lie on his other side. In the following case I made a mistake myself:—

"My colleague, Mr. R. A. Bickersteth, had removed some tuberculosis glands from the right iliac fossa in a youth who was under the care of Dr. Steeves. A few days after the operation the boy got an oscillating temperature, and although there was no respiratory distress it was found that the right side of the chest was quite dull. I was asked to see the patient with those gentlemen, found the right side of the chest absolutely dull from base to apex, absence of respiratory murmur, and no vocal phenomena. I rapidly came to the conclusion that the right pleura was full of fluid, which I thought should be drawn off, although there was no urgent necessity for interference. The following day Mr. Bickersteth made several punctures, but found nothing. I was again asked to see the boy, and then arrived at the correct solution of the problem. The youth got perfectly well under a course of respiratory gymnastics."

In exhausting diseases, when the patient has lain for a long time in one position, a partial atelectasis is apt to take place, which is often mistaken for hypostatic congestion of the lung. Under fairly similar conditions a true congestion of the lungs frequently takes place, but the two states are easily differentiated. In advanced cases of mitral stenosis collapse of numerous lobules in the posterior surface of both lungs is a matter of frequent occurrence. In these cases the oxidizing surface is greater than that demanded by the small quantity of blood passing through the lungs. Such cases usually pass on to more or less permanent collapse with brown induration of the lungs. Apart from cases associated with mitral stenosis, atelectasis, partial or complete, when early recognized, is very amenable to treatment; but when long neglected more or less permanent damage to the lung results, just as occurs when the lung has been long collapsed by a pleural effusion.

With care atelectasis is easily differentiated from pleural effusion even when the dull percussion is absolute and the respiratory and vocal phenomena absent. In atelectasis of one lung the affected side is smaller than the other, the ribs are closer together and more sloping, the costal angle more acute, the

diaphragm raised, the dull percussion barely reaches the middle line in front, while the sound lung passes beyond the mesial line, the heart is either not displaced or slightly pushed over by the sound lung. Forcible rubbing of the affected side, acting through the lung reflex of Albert Abrams, causes some expansion of the lung and clears up the percussion note. This is also accomplished by forcible expiration, or better by Valsalva's method. Every one who has attended a case of parturition knows how a vigorous child expands its lungs, and in the treatment of atelectasis in the adult you cannot do better than imitate Nature, minus the howl.

Etiology of Pleurisy.

The question of the etiology of each particular case of pleurisy should be settled as far as possible, as it is a most important point both for treatment and prognosis. I suppose every case is due to some microörganisms or their toxins; even those cases following injury or cold have only thus been rendered vulnerable. This also applies to those cases associated with some chronic illness, such as granular kidney, or those due to extension from the pericardium or peritoneum. The vast majority of cases are tuberculous, but a considerable number are rheumatic, or due to pneumococci, streptococci, staphylococci, the Bacillus coli, typhoid bacilli, and the influenza bacilli, etc. Many of these organisms are readily found in the serous effusion, but not so with the tubercle bacillus. It is often difficult in any given case to decide whether it be tuberculous or not. If you find any evidence of tuberculous disease in the lungs, or tubercle bacilli in the sputum, you may consider the question settled. Failing this direct evidence you should add a little citrate of sodium to the fluid withdrawn to prevent coagulation, then centrifuge, and examine the sediment for leucocytes, tubercle bacilli, and other microörganisms. If the case be tuberculous the cells will be mostly lymphocytes, whereas if the pleuritis be due to other microörganisms, the polymorphonuclear cells will predominate. Even in undoubted tuberculous cases you generally fail to find the tubercle bacilli, and the injection of the fluid into the guinea-pig is a very slow and often impracticable test. A blood-count often assists, as in tuberculous pleurisy there is no leucocytosis, whereas in that associated with other processes there usually is. A hæmorrhagic effusion is usually associated with tuberculous or malignant disease. A specific gravity of 1018 is generally put down as the dividing line between a transudate and an exudate, but it does not always hold good, as in some undoubtedly inflammatory cases I have found the specific gravity of the fluid as low as 1006.

Cases of dry pleurisy are frequently tuberculous, though not necessarily

so. In such cases there is a small effusion of plastic lymph, which is gelatinous in appearance and consistence, and contains a large number of cells with a relatively small amount of fibrin. This effusion quickly organizes, and joins the two pleural surfaces together. In tuberculous cases accompanied by effusion there is not much fibrin, and even the cellular elements may be small in amount. In pneumococcal pleurisy there is usually a large amount of fibrin whether there be much fluid or not. Those cases associated with streptococci, staphylococci, and Bacillus coli are frequently purulent or sero-purulent, and contain a large number of cells, and in the case of the Bacillus coli the fluid is very offensive. In cases of transudation the liquid contains a few endothelial cells and not much fibrin, and the specific gravity is below 1018. There are many cases, such as those arising in chronic Bright's disease, when the effused fluid is a mixture of a transudate and an exudate.

I am not going to weary you with symptomatology or diagnosis—as I shall take it for granted that you know as much about those subjects as I do—so we will now pass on to treatment.

(*Concluded in our next issue.*)

Editorial

THE ARMY MEDICAL DEPARTMENT IN WAR.

It is axiomatic that an effective army must be physically vigorous, and there are two chief requirements for success in withstanding disease in the next war. One is that the men themselves shall be subordinate, docile, willing to do as they are directed. This is hopeless until, like other untamed creatures, they are broken in. For the ordinary American to be obedient in diet, exposure, and general conduct, the precise circumstances wherein, throughout his life, he has been a law unto himself, is contrary to all precedent and, as he understands them, to the laws of life as well. This is doubly true of the class that, longing for excitement and ignorant of the conditions, offers itself as food for powder when the scent of war is in the air. However intelligent the medical staff may be, it is preposterous to expect it to charm away disease when the victims invite its approach. Along with this is the attention the officers should pay to medical advice. Whether one calls it respect or obedience, the officers of the line should give practical heed to expert admonition. Will they do so? Probably not. An army of volunteers change their dress, but not their minds, when they call themselves soldiers. Officers and men alike

will "gang their ain gait" until the hard knocks of disease teach them better ways. Some others (fortunately they grow fewer), regulars—usually made regulars by favor or by length of service, not by education—always mistake authority for knowledge, and never learn. The people themselves must be converted, must acquire greater wisdom, before such fundamental conditions are reformed.

The second requirement is a promptly available supply of reasonably competent physicians who, when called upon by approach of war, may become at once medical officers, sanitarians as well as clinicians—a rare combination. Surgeons are a drug on the market. Beyond the surgical attainments of the ordinary practitioner, available for the every-day casualties, only a few special operators for hospitals are needed for expert work. How to obtain these without delay is a problem. Under an autocracy the local doctor and his clientele of peasantry belong together to the reserves, and when they are mobilized he is mobilized with them. But the methods of conscription are unavailable for us. The Medical Department has evolved a scheme which, should Congress authorize it, will yield at least a partial supply of fairly qualified men to fill the openings that must immediately occur by the necessary transfer of some of the regular officers to administration duties. This is the creation of a Reserve Medical Corps. Without going into prolix detail, its substance is the securing of a sufficient number of physicians, tested by examination as to qualification and by testimonials as to character, who shall be available under pledge for a term of years to respond to the call for service. Under an age limit in early manhood there will be a constant current of new life replacing the vacancies created by expirations and otherwise. This will not interfere with the regularly qualified volunteer medical officers. The volunteers, according to tradition (a bad tradition it is), will have regimental medical officers maintaining in some degree regional association with the troops, and there will be a volunteer medical staff. Both of these afford patronage to the appointing powers, and the first gives a certain comfort to parents in the thought that their sons may be "looked after" by the family doctor. "Looked after" means being prescribed for when sick in that antithesis of economical administration, the regimental hospital. An ideal condition would be to form all volunteer medical officers into a volunteer medical staff, the analogue of the regular staff, free from the influence of previous acquaintance or the hope of *post bellum* favor.

The last Congress simply declined, or was not allowed, to take up a bill which, with complete unanimity, the Medical Department itself, the General Staff, the Secretary of War, and the President agreed in commending. It is

not reasonable to suppose that non-expert advisers can improve upon it, nor that with such a consensus of authoritative opinion it is in any respect at variance with the public interest. Good citizens owe it to the country, which means themselves and their fellows, to urge upon their representatives the speedy passage of that bill.

ALFRED A. WOODHULL.

SPEECH-READING IN ONCOMING DEAFNESS.

MUCH of the grief that oncoming deafness involves could be spared if, through some function other than hearing, the patient's ability to understand conversation were greatly increased. This is afforded by "speech-reading." The foundation of speech-reading for the little deaf child is laid in the lessons in which it is taught to speak. Its eye becomes accustomed to certain positions of the organs of articulation, and thus it learns to understand the spoken words of others. The adult who is growing hard of hearing may learn as successfully to read speech by the eye; but why should the cultivated man and woman be taught in the same manner as the child? Why should one who has a thorough knowledge of language be instructed as is the one who is wholly ignorant of it?

A little child forms a memory for sounds, syllables, and words, and out of that memory he speaks. That is how we have all learned to articulate. Each articulative sound produces a movement from within the speaking apparatus that works outward into an expression in the muscles of the face. If each group of sounds is associated with its special expression by picture and by watching the face, it becomes possible for the deaf person to understand spoken language; because when he sees the expression the memory of the sound is aroused—just as it would be by means of the ear—and thus the person *hears* the sound. When persons are but slightly deaf, the strain of listening is lessened greatly by the use of the eye as an aid to the ear, and the patient is able to retain what hearing he has longer than otherwise.

The forty-odd sounds belonging to the English language are revealed in sixteen outward manifestations or pictures. These expressions have been photographed, and thus each pupil can study the individual expression, read words thus spelled by arrangements of pictures, and learn to apply such knowledge to the human face.

Contrast the deaf child and the adult growing deaf: The child has no memory of sound and no language, and is taught to understand others by its own observation solely during the time it learns to articulate; the adult has a memory of sound, complete knowledge of the construction of sentences, and

is taught by scientific principles in a practical manner to resume social and business life. Why wait until deafness has fully developed to acquire these privileges? Many incurable cases would recover much of his or her happiness did the attending physician but suggest it.

LILLIE EGINTON WARREN.[1]
Rome, Italy.

"WRINKLES."

The late Milner Fothergill (than whom no man was more suggestive or practical) once made a significant observation. After some especially shrewd comment or recommendation he remarked: "This is a wrinkle; wrinkles are the marks of age, hence the evidences, presumably, of wisdom."

That which is of most value to the patient, all said and done, is the promptitude, thoroughness, and adaptability with which the practitioner of medicine meets those exigencies, solves those problems, by which he is confronted. It does not so much matter what system of belief he may cherish, which his "school," or what his convictions on the methods of drug-giving. He will win success in modifying confronting physiologic variations in proportion as he keeps in mind the fundamental principles of disease and their variants, and deals with these in accordance with such acceptable regulative potentialities as good hygiene, nursing, feeding, and the like common-sense measures. "It may be only the preference which each man-at-arms has for the weapon best fitted to his hand" (Woods Hutchinson); at least results follow judicious use of the instrumentality which can accomplish most for the individual because of skill attained by its frequent employment. The pity is that records are not made of many praiseworthy improvised measures, excellent generalizations, shrewd practical adaptations which long experience has made part of his daily armamentarium. It is the purpose of this short article to suggest that practitioners shall jot down those admirable points in diagnosis, prognosis, and treatment which often come to them, evolved during the stress and strain of meeting emergencies. Often these exigencies not only breed high resourcefulness in the absence of things he would gladly use, but are unattainable; so he must do with what he has at command.

It is safe to say that when our present epoch is judged by posterity, among the more cherished and respected facts will be many which are related candidly and concisely by careful observers who may not be trained in literary composition. The findings of "hospital men" are not necessarily superior to those of

[1] Speech-reading was devised by the writer, who has taught hundreds of deaf persons to follow conversation successfully. The method is taught in this country by Miss Eleanor Lewin, The Albemarle, Washington, D. C., and by Miss Leonora A. Bedell, 123 East Twenty-ninth Street, New York City.

the country practitioner. Those provided with hospital "services" are oftentimes thus happily placed by accident or favor, not true merit. It need not be assumed that such records thus made are intrinsically superior to the observation of earnest practitioners who bear the burdens at the bedside, in the homes, unprovided with watchful nurses, qualified internes, clinical clerks, registrars, and the like systematic helps to completeness. It is hoped this hint may be taken by readers, fuller notes taken, and concise transcripts accumulated.

The subject of these remarks is the value of "wrinkles," useful modifications of elaborate or "scientific" methods, often impracticable in their original presentation, yet serving well to help the sufferer across perilous places. In my earlier professional work a source of great aid and stimulus were the rare yet shrewd and practical papers by James Levick on bedside hints. Even the experienced interne, the man who has served two or three terms as "resident physician," has much to learn when deprived of his accustomed machinery of ward orderlies, nurses, and all the resources of a hospital. A world of clinical wealth is often lost by the death of capable, resourceful, busy general practitioners who leave no sign to perpetuate their capabilities.

During my sixteen years as professor in the Polyclinic College it was my pleasure and profit to question graduate students, some of them men old in years and wisdom, as to what they had done under certain circumstances. To be sure, modesty or diffidence deters many from relating a small group of similar instances. It is true greater force resides in marshalling massive testimonies. Yet few busy men can fail to encounter in ten years a host of correlated incidents amply justifying record. Notes should be careful and accurate. Effects follow obviously upon causes, however. The observations of some aggregated with other similar ones materially assist in the evolution of useful truths.

I recall several instances where I asked a clinician of marked originality to write me an article on a subject of which he was master. Objection was made that the idea of attempting such work was distasteful; one man said it "filled him with horror." Upon requesting that they merely take a pad and pencil and roughly write an account, in their own way, in the form of a letter, the results were valuable contributions to both science and practical medicine.

Horace Fletcher, that wise gentleman who has already taught the profession and the laity so much from his own personal experience, gives us (in the New York Medical Journal for November 30, 1907) a paper in which he sums up much of his previous findings. He sustains his contentions, as usual, by the evidence of his own person, which, at the age of 45 years, was

adjudged unfit for an insurance risk. The scope of his writings is much broader than the titles. His persistent teachings in the realm of applied hygiene, physical and psychical, make for the enunciation of a large principle, viz.: that we of the learned profession of medicine have need to prove on our own persons the truths for which we stand. In the main, we are pretty fair exponents of our beliefs. There are, as we all know, far too many exceptions. Is it not our duty, first to ourselves and next to our clients, that we make our own bodies exhibits of what our faith and works can accomplish? Do we not expect too much from, *e.g.*, clergymen, in the matter of sanity of mind, sincerity of purpose, and by so much as is possible wholesomeness of body? Horace Fletcher is not unique in his aims. There are many among the ranks of men who, like Abu Ben Adhem, "loved their fellow-men," but he has taught the whole world convincingly the potency of many new and fundamental points in hygiene along with metaphysical concepts of the utmost respectability and practical helpfulness.

J. Madison Taylor.

PRACTICAL HINTS ON DISEASES WHICH INVOLVE THE INTERNAL SECRETIONS.

In a former issue it was announced that the practical features which the writer's labors on the functions of the ductless glands had brought out would be published in this journal. As the foundation of the deductions to be presented was embodied in his work on the "Internal Secretions," it was necessary, in order to carry out this plan, to await the appearance of the second volume, then in press. The latter volume having now appeared, it is with pleasure that the writer announces his intention to begin the promised series of articles in the January issue.

C. E. de M. Sajous.

Cyclopædia of Current Literature

ALCOHOLIC INSANITIES.

Alcoholic insanity presents special characteristic features which it is not difficult, in the majority of cases, to distinguish from other analogous conditions. Acute cerebral alcoholism presents three states: delirious, confusional, and stuporous. The intensity of these states varies according to whether a subacute form is dealt with, or delirium tremens. The chronic form leads inevitably to dementia. In the course of development of the latter, delusions with hallucinations and illusions may

and may not manifest themselves. If the latter symptoms may sometimes present a picture of any other psychosis, this resemblance is only apparent, as in the majority of cases close observation will enable the proper interpretation to be found. If the symptoms proper of cerebral alcoholism may sometimes develop in individuals affected with other psychoses, who happen to commit excesses or do so because of the perverted mode of thinking or feeling caused by the psychoses, it does not follow that alcohol is capable of producing these psychoses. The conception of alcoholic melancholia, mania, paranoia, or paresis is unscientific, as it is not based on accurate observations. Alfred Gordon (Journal of the American Medical Association, November 16, 1907).

ALCOHOLISM.

The writer urges that the family doctor should set himself to treat alcoholism just as he would any other disease, with the full expectation of producing a cure. This has been rendered much more easy and feasible by the introduction of the hypodermic method of treatment. This method renders it certain that the patient gets the drug and that it enters not the stomach only, from which it may be at once expelled, but the blood and general circulation. The regular visits of the doctor are also very important.

In the acute stage of alcoholism, a very useful drug for hypodermic injection is apomorphine. In the excitement of delirium tremens a small injection of this drug will at once produce a calm, the patient will yawn, and is fast asleep almost before he can be got to bed. This sleep is sometimes preceded by vomiting. As the patient is liable to faint if sitting up, the injection should be given when he is in a recumbent position. Usually about four hours' sleep is thus obtained. But apomorphine is no remedy for alcoholic craving; while a good way of commencing treatment, it is only temporary. The drugs to be relied on to do away with the craving for alcohol are strychnine and atropine; they should be kept in solution and the injections given into the biceps muscle twice or three times a day. The injections may cause some dryness of the throat and disturbance of accommodation; tablets of potassium chlorate will remedy the former, and spectacles may have to be worn for the latter.

After the patient has regained health and vigor, which will be in about two to four weeks, the injections may be cut down to once a day for three weeks longer, after which their frequency may be still further reduced. The patient should be supplied with a tonic, to be taken when depressed or when the craving for alcohol is felt. A good one is four drops of the tincture of capsicum, with fifteen drops of the liquid extract of cinchona. Careful attention must be given to the general health. Albumin in the urine is not a contraindication to the treatment; indeed, it often disappears under the treatment. J. S. Bolton (British Medical Journal, October 12, 1907).

ANÆMIA, TREATMENT OF.

In regard to the treatment of anæmia, the writer considers deep inhalations of value. The diet should be based on the gastro-intestinal conditions. In general, the maximum amount of a nutritious mixed diet should be administered. In putrefactive autointoxication, indicated by increase of sulphites and indican in the urine, the best corrective is sour

milk, as suggested by Metchnikoff. The writer's experience with drugs has been disappointing. When he uses iron he employs Blaud's mass, the peptonate of iron, or Basham's mixture. Arsenic increases the number of corpuscles, and if used should be administered hypodermically. He attaches most importance, however, to physio-therapeutic measures, massage (manual and mechanical), and vibrations. While electrotherapy has practically no direct effect on the anæmia itself, it is a valuable auxiliary from its tonic influence over the nervous and digestive systems. The galvanic and static currents are particularly available. Hydrotherapy is strongly recommended and the method of its application detailed. The author insists on the internal use of water, but points out that the elimination of waste material is effected, not as generally supposed by a washing-out process, but by raising the blood-pressure and thus increasing renal activity. With regard to the electric-light bath, the writer is satisfied from long, clinical experience that, when followed by tonic percutient cold measures to promote a reaction, it is "almost a panacea in the treatment of secondary anæmia and chlorosis." C. Pope (New York Medical Journal, November 2, 1907).

APPENDICITIS, CUTANEOUS HYPERÆSTHESIA IN.

Three cases are reported by the author, in one of which a purely thoracic lesion led to a diagnosis of acute appendix disease; in the remaining two cases gangrene of the appendix was associated with thoracic symptoms. The cases show the importance of cutaneous hyperæsthesia in acute abdominal conditions. The areas of the hyperæsthesia may be said to roughly correspond to the anatomical division of abdominal walls, so far as the point of greatest intensity of the hyperæsthesia is concerned. These areas are: (1) A hyperæsthesia most intense about the situation of McBurney's point; (2) another in which the point of intensity is at or about the level of the navel; and (3) another in which the intensity corresponds with the level of the ninth rib. On the right side, the first of these is associated with certain acute cases of appendix disease, the second with inflammation or abscess about the lower surface of the diaphragm, and the third with implication of the pleura on the upper surface of the diaphragm.

In the development of this hyperæsthesia it is essential that the peritoneum or pleura should be involved; it is never met with in abscess of the liver or lung in the absence of peritonitis or pleurisy, respectively. So far as appendicitis is concerned, the occurrence of acute hyperæsthesia of the abdominal wall may be generally regarded as indicative of surgical complications; for example, grave appendix disease, probably with impending gangrene, subphrenic abscess, or empyema. In cases of acute appendicitis a very rapid or sudden disappearance of any one prominent symptom—*e. g.*, pain or high fever—without a corresponding change in all the other symptoms, is, as a rule, a sign of danger and not of improvement, and indicates that active interference should not be postponed. W. H. Bennett (Lancet, October 12, 1907).

ARTERIOSCLEROSIS, MINOR SIGNS OF.

There exists a series of early symptoms of arteriosclerosis, the importance of which as indices of danger is not easily recognized by the unprepared. These symptoms are in relation with

slight and variable troubles of the circulation. The arteries are less elastic, the contractility of their muscular coats is lessened, and as a result the regulation of the course of blood is imperfect. These troubles may be persistent, or may appear only as the result of labor or fatigue. The author divides these troubles into: (1) General, such as fatigue on slight exertion, accompanied perhaps by painful sensations, as in the case of a man who suffers from headache after a long walk. The expression is indicative of lassitude, or perhaps discouragement. Another condition is that of intolerance to certain substances, such as alcohol and tobacco. (2) Vasomotor, of the teguments of the face. The patients may be flushed, or, on the contrary, pale, and in some cases there is an instability of the vasomotor innervation. Some persons are pale in the morning and ruddy in the evening. (3) Nervous, shown in inaptitude for work, modifications of character, headache, abnormal sensations in the limbs with some difficulty of movement, neuralgic pains, vertigo, insomnia, neurasthenia, and the development of traumatic neuroses. (4) Loss of hearing. (5) Ocular troubles, such as the development of the arcus senilis on the cornea, thrombosis of the central artery of the retina, and spasm of the smaller retinal arteries. (6) Respiratory, a dyspnœa induced by comparatively slight exertion, and a condition of emphysema, the true cause of which is not easily to be recognized unless its possible relation to arteriosclerosis is considered. (7) Epistaxis, which may be one of the first indications of the change in the arteries. (8) Œdema of the legs, not very marked, in the absence of cardiac or renal disease. (9) Cardiac troubles, such as palpitation, sometimes associated with angina; in some cases a more or less marked tachycardia is met with. (10) Arterial overtension, continuous and persistent, is a good sign on which to base a suspicion of arteriosclerosis. (11) Renal symptoms, which may be those of great or little renal insufficiency. O. Josué (Presse médicale, October 23, 1907, New York Medical Journal, November 16, 1907).

BRIGHT'S DISEASE, THERAPEUTICS OF.

All therapeutics, to be scientific, must have for the primary object the removal of the causative factors of disease. Hæmorrhagic nephritis as such does not exist. It is an occasional modification of the chronic parenchymatous change. Most renal lesions are non-inflammatory processes. The one exception is the exudative class. Most renal lesions are due to overwork of the glands at a time when nutrition is impaired. Both the overuse and defective supply of the starches, sugars, and fats are important factors in the production, maintenance, and cure of renal lesions. Nervous overstrain is also an important factor.

Treatment is to be directed both to prevent and cure. It consists chiefly in the removal of causative factors. It calls for a thorough knowledge of chemico-pathology and dietetics. Drugs, while not curative, may indirectly produce wonderful results. These renal lesions, when studied from the histological standard only, are incurable. Considered from the physiological and chemical standpoint, a large per cent. are curable. It is difficult to see how surgery can be made to remove the underlying factors. Hence such means cannot be classed as scientific. W. H. Porter (Boston Medical and Surgical Journal, November 14, 1907).

CEREBROSPINAL MENINGITIS, EPIDEMIC, PROPHYLAXIS IN.

Cerebrospinal meningitis is communicable only by direct contact with fresh mucus from the nasopharynx of patients. A person who has taken the germ from a patient may acquire meningitis. Such a person may only acquire meningococcus pharyngitis and, thus acting as intermediary host, may carry this infection to others, near and far. It is necessary to find a therapeutical remedy which will kill the meningococcus in the nasopharyngeal mucus and mucosa. That the usual methods of disinfection, without destroying the organisms in the upper pharynx of all persons exposed to contact infection, cannot prevent the spread of this disease is the unanimous opinion of those best able to judge. During the last twelve years the author has used a solution of equal parts of resorcin and alcohol to disinfect the nasopharynx. The alcohol must be heated before the resorcin is added. A plug of absorbent cotton wound around the end of an applicator, dipped into this solution, is introduced into the nasopharynx. Swabbing is not necessary. Two applications, one past each side of the uvula, are sufficient. The curved end of the applicator must be long enough to reach the ceiling of the nasopharynx. The cotton must be well soaked with the solution, but only so that dripping does not occur. The applicator must be bent so as to suit the length of the respective nasopharynx. After two seconds the cotton must be withdrawn. The stomach must be empty. The contractions of the soft palate instantly press the fluid out of the cotton and into every fold of the mucous membrane. The alcohol penetrates deep into the mucosa with the resorcin, and there destroys every organism it comes in contact with. These applications are best repeated every forty-eight hours. Six treatments usually suffice to stop all secretions of postnasal mucus in a chronic case. In recent cases two applications in one sitting usually suffice. Infants one month old bear this treatment as well as, and often better than, adults. Hundreds of cases treated solely in this manner have always given the desired result. The first application is usually felt during the next twenty-four hours, the later ones cause no inconvenience. The two cardinal symptoms of postnasal catarrh, namely, secretion of mucus and multiple swelling of the posterior cervical lymph nodes, usually disappear after three to six applications. A. Seibert (Journal of the American Medical Association, November 16, 1907).

CYSTITIS IN THE FEMALE.

While primary tuberculosis of the bladder in the female is doubtful, secondary tuberculosis by extension from the kidney is by no means uncommon. The treatment of vesical tuberculosis, in any case a most desperate disease, gives better results in the female than in the male. The writer divides the subject of treatment into that of primary and of secondary vesical tuberculosis, meaning by primary tuberculosis those cases in which clinically the bladder lesion is the only important one, and using the word primary in reference to the urinary tract.

In regard to non-tuberculous cystitis, inflammation of the bladder, strictly localized and not extending to either kidney, is in most cases quite amenable to treatment. Every patient should be examined for the presence of inflammation of the ureter or the kidney. Be-

fore beginning treatment in intractable cases the upper passages must be free from disease. A nephrectomy or a nephrotomy may be necessary, a calculus may have to be removed, a strictured urethra dealt with, etc. Cure can not be expected unless these things are attended to.

In all cases of chronic cystitis the form of organism present should be determined. Wright's method, by injection of appropriate vaccine, is a step forward. Chronic cystitis requires untiring patience. Many cases may be avoided, being the result of improper treatment in the acute stage. E. Garceau (American Journal of Obstetrics, September, 1907).

DIABETES MELLITUS, TREATMENT OF.

The problem in diabetes is either to restore the carbohydrate metabolism or to substitute some other source of energy and heat. Direct efforts to accomplish the former have failed, but it is possible for proteid metabolism to take the place of carbohydrates to a degree. Fortunately, also, in many diabetics there is still a certain capacity to assimilate carbohydrate, and by this, together with proteid metabolism, the health can be more or less maintained.

The dietetic treatment is of the first importance, and the first step is to ascertain how much carbohydrate is assimilable and to give this much or a little more. Each patient is more or less a law unto himself, and the food trials must be checked by frequent quantitative analyses and weighings of the patient. The best method is to place him first on a purely proteid diet, and if sugar disappears in the urine to add gradually small amounts of starch-containing foods until sugar reappears, such reappearance beyond 2 per cent. being the signal for stopping the addition of carbohydrates. The patient should be put again on a purely proteid diet for about five days once a month, to see how far the sugar output is controllable. The writer notes the difficulty of obtaining palatable bread containing only a minimum of starch, in this country, and gives the results of analyses of some of the advertised preparations.

Dietetic treatment is rendered more efficient by hygienic and medicinal measures; and of the former, he specially mentions keeping up the action of the skin by daily bathing in tepid or hot water, assisted by friction and masssage and exercise short of fatigue. Sleeping in a large and well-ventilated room, or even out of doors, favors the combustion of carbohydrates. Constipation is to be specially avoided, and the writer has found large high injections once or twice a week, in addition to the ordinary purgatives, very useful. Calomel is a purgative especially indicated, but large doses may be needed.

The medicinal treatment, though not very satisfactory, should not be neglected. If it be possible to get at the cause, its removal is, of course indicated. Tumor in the fourth ventricle, specific or otherwise, may possibly call for operation or specific treatment. There are some cases that seem to be connected with gout or rheumatism; and if the pancreas is certainly at fault, pancreatic preparations may be tried. The only remedies that seem to have a direct influence on diabetes without regard to its cause are opium and arsenic. It is not known how these produce their good effects, but the writer thinks it more than likely that opium acts by quieting the nervous influences that aggravate the symptoms

of diabetes. It must not be used, however, in constipated patients, as its added constipating effect makes the condition worse and increases the danger of diabetic coma. He prefers to use codeine instead of the crude drug, beginning with a quarter of a grain three times daily and adding a quarter of a grain daily until the desired effect is produced or the daily dose reaches 4 or 5 grains. Arsenic is much less effective than opium, and chiefly in mild cases. The writer has sometimes thought that it acts by aiding oxidation. His favorite preparation is Fowler's solution, which he prefers to give in rather small doses extending over long periods without interruption, rather than to produce the physiologic effect of the drug.

The coal-tar derivatives are now seldom used and are likely to be beneficial only in mild cases. Hedonal and aspirin have been recommended; their effect may be like that of opium. The bromides may be sometimes useful. The writer sees some prospect of good in organotherapy, more especially in the injection into the blood of the amylolytic secretion of the pancreas. Some claims have been made for "secretin," the active principle of the succur duodenalis, but to make its trial complete it will need to be used hypodermically.

The writer calls attention to the prophylactic restriction of sugar and starch in the diet of those hereditarily disposed to diabetes and obesity. Too little attention has been paid to this matter in the past, chiefly because the attention of physicians has not been called to the existence of such a hereditary tendency until after the disease has established itself. J. Tyson (Journal of the American Medical Association, November 9, 1907).

DYSPEPSIA OCCURRING AFTER OPERATIONS FOR GASTRIC ULCER.

This comprehensive study is based on 102 cases; the ulcers were operated on in the course of the last ten years. It was found that 3 of the patients had died, 1 from tuberculosis and 2 from cancer. In 70 per cent. of the others there were functional disturbances, local and general, causing symptoms of dyspepsia. Pain was the most constant symptom. It appeared generally from three to five hours after the meal, and occured in crises, lasting through several days, recurring in spasms, with tenderness of the parts near the old scar. The pain was sometimes brought on by fatigue, but more often by errors of diet. Vomiting is rare; when it occurs it is generally regurgitation of water, frequently containing bile. Occasionally the patient vomits food when over-tired or after errors in diet. Constipation is frequent, and diarrhœa was observed in 7 or 8 per cent. of the cases. Examples of the various types and combinations of symptoms are reported. The best results were obtained in the cases of stenosis, pyloric ulcer, or recurring hæmorrhage, while the patients whose ulcer was at some distance from the pylorus and those with hour-glass stomach seemed most exposed to post-operative disturbances.

Treatment should be by hygiene and dietetic measures, with rest. Moderation in eating and drinking should be impressed on patients after an operation on the stomach, and they should be warned against over-fatigue. In one of the cases cited the operation had been done during a subacute gastritis, and the patient's stomach was as intolerant after as before until soothed by application of ice to the epigastrium and suppression of all food or drink by the

mouth for three days. In the total number of cases examined the ultimate results were bad in 7 per cent.; fairly good in 39 per cent. (a great improvement over the conditions before the operation); and in 54 per cent. the results were good. Liquor, bread, fruits, and heavy dishes were frequently responsible for the reappearance of the dyspeptic disturbances, and their elimination from the diet generally brought relief. E. Parmentier and D. Denechau (Semaine médicale, October 9, 1907; Journal of the American Medical Association, November 9, 1907).

GANGRENE AND ECLAMPSIA.

Four curious and important cases are reported by the writer, in which the application of hot bottles, etc., during puerperal eclampsia was followed by a destruction of tissue at the spots where artifical heat had been applied and also at other places where pressure was exercised by one part of the body on another. In one case the patient lay with the left hand under her back, and in another case gangrene occurred on the heel of one foot which was crossing the front of the ankle of the other.

The resemblance of these cases to burns makes them of considerable medico-legal interest. That they were not burns, however, is probable from several reasons: (1) In every case the warmth was carefully tested on the persons of the attendants; (2) the difference between a normal temperature and that of the application was not sufficient to cause the injury; (3) there was not a correspondence between the character of the injury and the pathology of a burn, inasmuch as in the case in point the most intense injury, instead of being at the point of contact, was deep below the surface. Only a transient hyperæmia followed the removal of hot applications and then the process went on, constituting a sequence of clinical symptoms never seen after a burn of any degree, so that the heat alone could not be responsible for the condition.

That it was not due solely to pressure is suggested by the fact that the flesh at the point of contact at the bed was not affected, but only where the pressure was between two parts of the body. From this the writer concludes that pressure and heat must be associated with a third something which the patient herself furnishes, and suggests that the solution lies in the presence of a chemical irritant in the blood itself that so alters the character of that fluid as to cause the tissues to break down in the presence of a determining factor. He mentions the analogy of diabetics, in which slight inflammations may lead to diabetic gangrene, and that it is highly probable that a chemical irritant with approximately the same formula might be found circulating in the blood of the diabetic and of the eclamptic. He suggests acetones or diacetic acid, and refers to Stolz's demonstration that there is an increased acetonuria during labor, especially in the primipara, which is greatly intensified during the first three days of the puerperium. C. B. Reed (Surgery, Gynecology, and Obstetrics, September, 1907).

GLAUCOMA.

The causal factor of glaucoma exists in a primary obstruction and closure of the pectinate ligament, due to sclerosis of the fibrous structures about the filtration area, and all other changes are secondary to this. The

hindrance to the aqueous outflow does not arise from the peripheral anterior synechia so frequently met with in glaucoma, but is caused by the closure of the interspace of the pectinate ligament in consequence of the fibrosis of the cells of its connective tissue stroma and the formation of a homogeneous membrane around these fibrous bundles, leading to the endothelial cells being first brought into contact, and then welding together the fibrous structures. The iris, in addition, is not only a diaphragm, but an absorbing surface accessory to the pectinate ligament, and when the latter is obstructed the iris has to do the whole of the drainage. When the pupil becomes dilated, its area becomes lessened and the crypts near the pupil become closed, and thus the blocking of the angle of the anterior chamber is a consequence of the acute iritic œdema, and not the cause of the glaucoma. The œdema of the ciliary body relaxes the suspensory ligament, thus allowing the lens to become more globular and consequently causing shallowing of the anterior chamber. By modifications in these processes, acute, subacute, and chronic glaucoma are explained. The reason why myotics cause diminution in tension is because the crypts on the surface of the iris become open and the aqueous is able to find its way out. Mydriatics act in just the opposite way. After an iridectomy, the stump of the iris shows no signs of healing. The operation opens up permanent channels by which the fluid can drain away. The operation will always be effective unless the iris tissue is too atrophied and degenerated. T. Henderson (British Medical Journal, November 2, 1907).

GRAVES'S DISEASE, FRONTAL ALOPECIA IN.

Attention is called by the author to the occurrence of a congenital form of frontal band alopecia which appears possibly to be related to exophthalmic goiter on the one hand, and on the other to certain signs and symptoms connected with that disease. Hairlessness in the frontal region is characteristic of infants; its persistence into later life constitutes the congenital frontal band alopecia or congenital high forehead. It is far more frequent in girls than in boys. The band may be quite bald, and is almost invariably associated with bands that run backward in a line with the frontal eminences. The band itself may be from one-half to one inch in width; it is situated at the anterior margin of the frontal portion of the scalp, and extends from one frontal eminence to another. This congenital frontal band alopecia often runs in families and is hereditary. The author has found it, in both children and adults, constantly associated with enlargement of the thyroid and tachycardia, nervousness, pigmentation, chilblains, epistaxis, and tremors, a condition suggesting potential Graves's disease. In eighteen cases of exophthalmic goiter, the congenital frontal band alopecia was present in all. It was present in five out of six cases of myxœdema. It may possibly indicate some evolutionary change, or may be degenerative or trophoneurotic. D. Walsh (Lancet, October 19, 1907).

HÆMATURIA.

For practical consideration the renal conditions producing hæmaturia and accompanied by pain are calculus, tu-

berculosis, and tumor. In calculus there is frequently a colic, pain over the affected kidney, radiating down the ureter, and increased urinary frequency. The hæmaturia and pain are diminished in the recumbent position. In tuberculosis hæmaturia is rarely profuse, is intermittent in character, not affected by rest or exercise, and always accompanied by moderate pyuria. Tubercle bacilli in the urine are convincing. In tumor, hæmaturia is profuse, without apparent cause, not necessarily accompanied by pain, and has a distinct tendency to intermit. A well-defined tumor is usually present by the time the physician's attention is called to the case.

Among conditions in which hæmaturia without pain is present are chronic interstitial nephritis, angioma of a renal papilla, and benign or malignant growths of the kidney. There is also a painless hæmaturia, classed as essential or idiopathic hæmaturia, in which hæmorrhage is profuse, not affected by rest or exercise, and not attended by any known pathologic lesions. This condition does not include tropical hæmaturias due to micro-organisms.

The etiology is a matter of academic speculation. Various origins have been assigned. The author considers that the majority of such cases are in reality due to degenerative changes in kidney structure. With regard to diagnosis, renal hæmorrhage can be distinguished in a clear medium by the cystoscope, of which the author prefers the indirect type with a cold lamp. He is disappointed in routine ureteral catheterization and the use of urine separators. H. M. Christian (New York Medical Journal, October 26, 1907).

INSANITY, RELATIONSHIP OF TRAUMA TO.

It is a well-established fact that secondary or organic dementia is never directly due to an injury, but is the natural result of other conditions which may be so caused, as cerebral hæmorrhage, meningitis, epilepsy, acute primary traumatic insanity, and acute primary dementia. It can be arrested, then, if such a chain of events is established, that the organic dementia is a natural result of the injury to the brain. As a result, the patient slowly develops loss of memory, especially for recent events, mental confusion, and defective reasoning, groundless likes and dislikes, deterioration of character, and occasionally delusions and hallucinations. Once developed, it is an unquestioned fact that the condition is permanent in character, but not necessarily in degree, as periods of temporary or permanent improvements are frequently seen. It has been the writer's experience that in young and healthy persons some degree of improvement can be noted after several years. This statement is based upon the condition noted in 106 cases. Of these, 40 had improved, 26 improved, but relapsed, and 39 had progressed. General paresis or paralytic dementia is a disease which was ascribed to head injury by many medical writers, but at the present time the majority of such writers consider the disease of syphilitic origin. A. C. Brush (Medical Record, November 16, 1907).

KIDNEY, DISLOCATED.

Dependent pathology, accompanying the primary lesion of dislocated kidney, gall-bladder trouble, and appendiceal irritation of a severe nature are of frequent concomitant occurrence. Many cases have undergone operation for ap-

pendiceal or gall-bladder trouble where the causative factor was a dislocated kidney, the latter producing pressure interference to the bile outflow or bowel current.

All cases presenting for abdominal treatment, complaining of indefinite and recurrent distress, discomfort, and pain, these attacks being accompanied with the presence of an excess of stagnant gas at certain tender points in the bowel, and in which the involvements of the stomach, gall-bladder, and appendix are more or less equal, should receive the most careful and repeated consideration from the physician, in order that a distinct differential diagnosis may be concluded. In the vast majority of instances, a freely movable kidney presents no pathology on the part of the organ itself, and this immunity may cover a considerable space of time after there appear symptoms of functional and mechanical disturbance on the part of the stomach, cholecyst, and bowel. On account of the wide, uncircumscribed range of pathological symptoms produced by a dislocated kidney, it is more often liable to proceed undiagnosed than any other symptom-producing abdominal lesion.

Permanent and complete relief results only from correction of the primary lesion with its dependent pathology. Earl Harlan (American Journal of Surgery, November, 1907).

MALNUTRITION, TARDY.

Under this heading the writer discusses a class of cases familiar to physicians, of children who, without suffering from serious constitutional disease, show marked developmental defects, such as underweight and muscular insufficiency, and also a lack of physical energy and resistance to disease. They almost invariably suffer from secondary anæmia, have indifferent appetites, and are often habitually constipated. The chief cause is underfeeding; not necessarily lack of quantity of food, but ill-selected food. The next most important factors are excessive expenditure of energy and lack of adequate rest. These may be brought about by exacting school requirements or by anything that overtaxes the developing organism. The defects of school management of children are probably overestimated, but still they exist and should be watched for, but not made the scapegoat for home deficiencies.

In the management of these cases, each detail of the child's life should be studied and every error corrected so far as possible. The writer gives his method in detail for cases in which no condition deterrent to growth exists, consisting in a sort of rest-cure, avoidance of mental and physical stress, a regulated high-proteid diet, three meals a day being usually best for children, and agreeable attendance. Malnutrition children who are inmates of a neurasthenic home, or one where there are stronger and noisy children, do best when changed to quieter surroundings. In a few of the author's cases the regulated life of a properly conducted boarding-school has been found beneficial. Sugar is generally best restricted, as these patients are apt to be overfond of it, while bearing it badly. The author states: "A common-sense diet, an absence of food and sweets between meals, with one and a half or two hours' rest after the noonday meal, have been proved by bimonthly weighings and blood-examinations to be of more therapeutic value than I would have believed possible had I not personally

observed it in a great many cases." C. G. Kerley (Journal of the American Medical Association, November 9, 1907).

NEURASTHENIA AND CHRONIC SUPRARENAL INSUFFICIENCY.

The importance of careful examination of the various neurasthenics in trying to reach a diagnosis is dwelt upon by the writer. Certain facts have recently been brought forward which suggest that lesions of the suprarenal glands may produce the phenomena which are common in neurasthenia. In its acute forms suprarenal insufficiency may take the form of pseudoperitonitis with sudden death, pseudotoxæmia, pseudomeningitis, or pseudotyphoid fever, the diagnosis resting principally upon the two symptoms, asthenia and vascular hypotension. In the subacute and chronic forms there have been few reported cases, excepting those of E. Sergent and L. Bernard. In the paper of these authors the following symptoms are mentioned: (1) Circulatory troubles, including chilliness, small and unstable pulse, arterial hypotension, tachycardia, collapse, syncope. (2) Digestive troubles, including anorexia, vomiting, diarrhœa, and peritoneal symptoms. (3) Nervotoxic troubles, including encephalopathy, headache, excitement, delirium, convulsions, depresssion, coma, asthenia, and acute pains. (4) Hypothermia, anæmia, emaciation and cachexia, and cadaveric odor. E. Schneider (Revue de médecine, October, 1907; New York Medical Journal, November 16, 1907).

OVARY, PROLAPSE OF THE.

Many cases of prolapse of the ovary are unaccompanied with symptoms. In these cases the ovary is probably not inflamed or adherent and has ample room for movement. Many cases, however, are accompanied with characteristic symptoms, and are only to be cured by elevating the ovary out of danger of irritation and traumatism. Failure to recognize the accompanying prolapse of the ovaries with a retrodisplaced uterus, and to elevate them, is often the cause of an unsatisfactory result following an operation for retroversion.

Operations to elevate the ovary which depend on shortening the infundibulopelvic or the ovarian ligaments are always prone to a recurrence to the former conditions, should the same etiologic factors be again present. Any operation which throws the infundibulopelvic ligament into a fold by doubling it is open to criticism that there is danger of causing an obstruction to the circulation in the ovarian veins and thus increasing an already existing passive congestion of the pampiniform plexus. The Mauclaire-Barrows operation offers a positive and permanent remedy for prolapse of the ovary, as recurrence is impossible. It is very simple and rapid of execution. The anteligamentous transposition of the ovary in no way interferes with the function of menstruation or fecundation. It is not necessary to fasten the end of the tube forward of the broad ligament in the proximity of the ovary to favor fecundation, as proved by Barrows's cases. The operation can be combined with suspension of the uterus, Gilliam's operation, shortening the round ligaments or the infundibulopelvic ligaments for an accompanying retroversion or prolapse of the uterus; and it can be performed by the vaginal route much more readily than the other operations. G. G. Ward, Jr. (Journal of the American Medical Association, November 2, 1907).

PARATHYROID GLANDULES IN PRIMARY INFANTILE ATROPHY.

The writer reports a close research on the condition of the parathyroid in a case of primary infantile atrophy, and states that in primary infantile atrophy the parathyroid glandules show changes which may be degenerative in type, but which are, for the most part, progressive, and consist in replacement of a varying amount of the gland parenchyma by connective-tissue stroma. These changes are similar in nature to those which are constantly present in the thymus gland in this disease. Moreover, these progressive changes are present in other ductless glands, and become especially apparent in long-standing cases of the disease, as evidenced in the extreme atrophy of the thyroid and medullary suprarenal in the cases described. The author does not imply that these various glands are primarily at fault in infantile atrophy, but rather emphasizes the fact that failures of assimilation in this disease lead to wider changes than simple wasting of fat and muscle. The fatal result in this disease is more easily understood when the physician realizes the constant involvement of structures that elaborate substances which are essential to health, or even life itself, as are here found. R. L. Thompson (American Journal of the Medical Sciences, October, 1907).

POST-OPERATIVE INTESTINAL DISTURBANCES, ETIOLOGY AND TREATMENT OF.

Attention is called by the writer, to the diarrhœas which are occasionally encountered in the after-treatment of operations on the gastro-intestinal tract. These, he maintains, are due to lack of alkali. The intestinal contents, as it passes from the small into the large intestine, always has an alkaline reaction in man and in dogs. The amount of alkali depends on the amount ingested and the amount of intestinal juice secreted. When the intestinal acids cease to be neutralized by alkaline elements, they have an irritating effect on the mucous membrane, and diarrhœa results. When the alkali ingested is not sufficient to keep the balance, and the intestinal juices are lost in the diarrhœa, the organism suffers from alkali poverty, and in severe cases coma may ensue and acetone appear in the urine. In cases of inanition the urine should be examined for diacetic acid and acetone, and the history studied for previous diarrhœa. After operations on the digestive tract ileus may develop, and the patient succumb in coma from lack of alkali. Such patients should be fed with carbohydrates, and sodium bicarbonate should be given in various ways, even by intravenous injection of a 3 per cent. to 10 per cent. solution. One case reported by the writer, after operation for suppurative peritonitis, was already in coma from post-operative ileus followed by profuse diarrhœa. Opium treatment for the diarrhœa, and administration of from 12 to 15 grams of sodium citrate daily, arrested the diarrhœa, and prompt recovery followed. Heile (Deutsche medizinische Wochenschrift, August 22, 1907; Boston Medical and Surgical Journal, November 7, 1907).

PROSTATIC HYPERTROPHY, TREATMENT OF.

If the tumor, upon examination, is found presenting toward the perineum, then, in view of the lesser mortality, the infrapubic operation should be performed. If the prostatic enlargement extends high into the bladder, and if

there is a large amount of residual urine, or if calculi coëxist, then, if the patient is not obese, the suprapubic operation should be done. If the urine is septic and if secondary changes have taken place in the bladder and kidneys, then, as a preliminary measure, perineal drainage should antedate the enucleation. If the patient is in extreme condition from senile and pathological complications, then the palliative operations of Bottini or Chetwood should be resorted to, preferably under local anæsthesia. Disappointing results sometimes follow, such as strictures of the urethra and fistulæ, which may require operative relief. Interference with the sexual function may result. The bulk of the gland should be removed in individual lobes, without making an effort to remove absolutely all the prostatic tissue, for it should be remembered that the prostate cannot be removed in one mass without also removing with it the prostatic urethra.

The proper and early treatment of a patient suffering from prostatism is most essential. Prostatectomy may be often controverted by proper hygiene and local treatment. The catheter should ever be used habitually, and if its use becomes necessary in relieving acute retention then the most scrupulous asepsis should be observed. The time for operation is before toleration and infection, and should be performed as soon as retention indicates the progression of the disease. J. H. Gleason (New York Medical Journal, November 16, 1907).

RHEUMATIC CARDITIS IN CHILDHOOD.

The pathology of rheumatic carditis presents four salient points: First, it is a carditis. In four autopsies the endocardium and myocardium were inflamed in each instance, and the pericardium three times. Second, the rheumatic infection is blood-borne, and attacks the heart just as it would any other organ, by way of its own special nutritional blood-supply, in this instance the coronary arteries. Third, the gravity of rheumatic carditis in the earliest or "childhood" stage lies mainly in the damage done to the muscle. Fourth, rheumatic carditis, like all rheumatic lesions, is remarkably apt to recur—or should it be said to recrudesce?

Perhaps the infective agent lies quiet in the cardiac tissues, awaiting opportunity to reassert itself; perhaps it is stored elsewhere in the body, and issues thence at intervals to infect the heart again. This way of regarding rheumatic heart disease, that is, as a carditis principally important in childhood by reason of the muscular lesions, is confirmed by clinical experience. The typical physical signs—outward displacement of apex beat, widened area of impulse, abnormally ready perception of the peristaltic nature of systole, increase of transverse cardiac dullness on both sides, the murmur of mitral incompetence, and the signs of raised pulmonary tension, indicated by tremendous accentuation of the pulmonic second sound, which is often doubled also—are all due to a dilatation of both ventricles.

In both endocardium and pericardium, the relation of the rheumatic infection may, for convenience sake, be divided into three stages: the acute, the recurrent, and the cicatricial. The object of the paper is to show that for the production of those signs which are found in the great majority of cases of rheumatic carditis in childhood, it is quite unnecessary to blame the valves or the pericardium; the myocardial

changes whch are always present are enough to account for everything. C. Coombs (Bristol Medico-Chirurgical Journal, September, 1907).

RHEUMATOID ARTHRITIS.

The writer holds that rheumatoid arthritis is a constitutional disease, not a local one, the affection of the joints being only a part of the process. It is not due to the presence of microörganisms which gain access to the blood probably through some chronic catarrh of the ailmentary tract, although the infection may also occur from the nose, pharynx, or lungs. After entering the circulation they find a suitable nidus in the joints, where they grow in the synovial membranes, ligaments, cartilages, and bones. Inflammatory changes result, causing ulceration, erosion, destruction, and hypertrophy. During the growth of the organisms toxins are produced, which, by their action on the nervous system, produce the nervous symptoms of the disease, while the toxins acting on the vasomotor nerves and the trophic nerves of the skin produce the local sweatings and pigmentation. The disease is commoner among women than men, and the acute form is generally met with in earlier adult life.

If rheumatoid arthritis is seen and recognized early in the acute stage, it is curable. In the later stages it may be arrested, but the deformed joints cannot be brought back to normal. The most useful drugs are guaiacol and potassium iodide. Guaiacol, if given long enough and in sufficient doses, can arrest the disease, diminish the size of the joints, and markedly relieve pain. It probably acts by inhibiting the growth of the specific microörganism. It is best given as the carbonate in cachets, in doses of five or ten grains, gradually increased to fifteen or twenty grains. Cases do not do well at the seashore, but are benefited by dry, warm climates, such as Egypt. A. P. Luff (British Medical Journal, October 26, 1907).

ROENTGEN RAYS, PROTECTION FROM.

Much of the seriousness of Roentgen operators' lesions has been due to meddlesome surgery and medication. This has resulted from an inappreciation of the character of these lesions. Their course and clinical character, as well as experiment, have shown that they are due to injury to trophic nerve, decreased nutrition, and blood-supply. The area involved extends wide of the visible lesion, and hence reparative processes cannot follow local surgical interference or stimulant medication.

The first principle of treatment is to avoid all further depression and injury to local nutrition, and increase systemic tone. The best local treatment is to let the lesions alone and protect them from further irritation. The best treatment is prophylactic, and therefore the protection of the operator should be carefully studied. The best method of protecting both the operator and patient is to confine the radiations to the area to be examined or treated. This can best be accomplished by surrounding the tube or source of all radiations by sheet-lead of sufficient thickness, or the weight known as six pounds to the square foot, over the active hemisphere of the tube. The entire tube should be enclosed in a box of sheet-lead having diaphragms of varying size through which alone the rays are permitted to pass. This material may be employed by having an air insulation of four inches on each side of the tube, or a total of six inches, which gives a sufficient

working variation for the internal resistance of the tube. C. L. Leonard (New York Medical Journal, November 16, 1907).

RUPTURED PUS-TUBES.

These may be divided clinically into three classes: (1) Those which rupture into the peritoneal cavity, but in which the pus is restrained by adhesions from setting up a general peritonitis; (2) those which rupture into some adherent viscus, the bladder, intestines, or rectum; (3) those which rupture into the peritoneal cavity, the pus not being walled off, and if virulent, setting up a general peritonitis which acts much like an acute ruptured appendicitis, and usually causes death unless operative measures are employed. But it is more amenable to operative measures than peritonitis caused by appendicitis. The most common of these classes is the first, the pus escaping from a tube being frequently confined by adhesions. The quantity of pus may be very large, and rupture may take place into the bowel or the peritoneal cavity, or death may result from the absorption of toxins. In the second class there is great danger of secondary infection through the sinus, and complete cure is only obtained by removal of the tube and closure of the sinus. The third class is a very small one and usually results fatally. E. C. Mann (American Journal of Obstetrics, October, 1907).

SCARLATINA AND DUKES'S DISEASE.

The writer describes the clinical features of Dukes's disease, the fourth of the exanthemata with morbilli, scarlatina, and rubella, as observed by him as follows: The disease is apparently less contagious then measles, probably equal to that of scarlatina, with a period of transmissibility of from one to three weeks. The incubation period is from one to three weeks. Prodromata are often wanting, the first symptom not infrequently being the rash itself. Occasionally, however, febrile symptoms precede the eruption by from six to twenty-four hours. Initial vomiting is exceptional. Mild catarrhal symptoms, with hyperæmia of the faucial, oral, or ocular mucosa, may be present, but not usually. The eruption almost invariably appears first on the face, rarely on the neck, and spreads rapidly downward, involving the trunk and portions of the extremities in a few hours. It does not seek the flexures, and is usually pronounced over areas irritated by clothing or decubital pressure. Occasionally fine points first appear, which quickly blend in a general hyperæmia, with rarely small patches of normal skin sharply defined by irregular margins. The marked oronasal pallor of scarlet fever is not in evidence. The color of the rash is very suggestive of scarlatina, and fades rapidly after two or three days, without stain, such as is observed in measles and often in rubella. Itching is absent, nor does the skin feel hot to the touch, as in scarlet fever. Desquamation usually, but not always, follows the disappearance of the exanthem. Its character is fine and branny, rather than in shreds and patches as in scarlet fever. The febrile movement, usually marked, subsides rapidly with the eruption, rarely exceeding two or three days. The tongue, except for occasional coating, is negative, as also is the throat, save occasionally for a mild hyperæia. The pulse shows no acceleration out of proportion to the febrile movement. Usually the post-cervical and occipital

lymph nodes are palpable early in the attack, but frequently show no swelling whatever. No massive enlargements nor softening have been observed in uncomplicated cases. As a rule, no sequelæ occur, and rarely complications, the course being usually mild and uneventful.

It is distinguished from scarlet fever by (1) long period of incubation; (2) absence of initial vomiting; (3) moderate fever of brief duration; (4) normal ratio of pulse to temperature; (5) absence of characteristic scarlatinal tongue; (6) the absence of, or, if present, the fine character of, desquamation; (7) the freedom from sequelæ; (8) probably the absence of leucocytosis. When one or more cases of apparent mild scarlet fever occur in a family giving a clear history of former attacks of scarlet fever, Dukes's disease may be suspected. A. C. Cotton (Journal of the American Medical Association, October 26, 1907).

SCOPOLAMINE-MORPHINE ANÆSTHESIA IN OBSTETRICS.

Marked benefit from the use of scopolamine-morphine anæsthesia in obstetrics is reported by the writer; no bad effects were noted. The solution was used as follows: As soon as uterine contraction occurred, at five-minute intervals an initial dose containing $^1/_{150}$ grain scopolamine and $^1/_6$ grain of morphine was given hypodermically. This was repeated at intervals of one to two hours unless patient showed marked reaction to the initial dose. In no case was the dose repeated after the cervix became two-thirds dilated. The results of this treatment were that the pain of labor was remarkedly reduced; the recollection of pain endured was almost obliterated; labor was shortened, as well as made easier; the necessity of operative interference has been distinctly reduced; there has been no tendency to hæmorrhage. It is important that the drugs be used as fresh as possible. F. S. Newell (Surgery, Gynæcology, and Obstetrics, August, 1907).

SQUINT, CONGENITAL.

It is doubtful whether or not a distinct discrimination is always made between congenital and concomitant squint. The usual diagnostic point of difference, the limitation of the movements of an eye, is not always easily detected in young children, and when seen may be referred to a postnasal cause. It is only after the visual centers begin to be educated that the flaw in the mechanism becomes manifest; moreover, actual paralysis may not appear until the demand on the defective cerebral center has begun to impair its function. There are, however, other signs that can aid the diagnosis, and among these may be mentioned the inequality of the primary and secondary deviations, the absence of involvement of the iris and ciliary body in congenital palsies, and the reaction of degeneration in the levator in acquired cases in which ptosis is present, the detection of nystagmus in congenital squint, etc. The cause of the condition may be central, as in imperfection of brain centers, or peripheral, as in case of muscular abnormality or orbital malformation. Heredity plays a large part, and the defect is especially frequent in Jews.

The types of deviation in congenital squint are manifold, as is shown in seventy cases reported by the writer. A not uncommon type is divergence of the visual axes, and there is frequently

an anatomic basis in divergent orbits or some abnormality of muscular insertion. A summary of the types in the seventy cases is given, and the author insists on the importance of the early recognition of this abnormality, not only on account of the ocular defect, but also because of its significance as a symptom of possible obscure central nervous defect. The treatment is necessarily quite different from that of concomitant squint. No orthoptic exercises are of any use; operation is the only recourse, and this often presents great difficulties. The case should be studied in every detail and the ordinary rules may have to be abandoned. A single operation is seldom sufficient; tenotomy of one or more muscles and advancement of associates will usually have to be performed. W. C. Posey (Journal of the American Medical Association, October 26, 1907).

SYPHILIS, PROPHYLAXIS OF.

A salve containing 33 grams of calomel (495 grains), 67 grams (1000 grains) of lanolin; and 10 grams (150 grains) of petrolatum, has been found by the author an effectual means of preventing the development of syphilis after inoculation of the virus. He refers to the experience of the medical student, Maisonneuve, who escaped infection from a massive inoculation of the virus, followed an hour later by application of the calomel salve. This experience has been repeated again and again on monkeys. This preventive measure is effectual only when applied during the first few hours after inoculation, but he found that injection of 0.03 centigram of atoxyl per kilogram of body weight prevented the development of syphilis, if the injection was made within a period of fifteen days after inoculation. This experience was constantly repeated in his experiments on monkeys at the Pasteur Institute. Applying these findings to man, it would require about 2 centigrams (30 grains) of atoxyl for an adult of average weight. This amount is too large to be safely used, but Hallopeau believes that the same result can be accomplished with an injection of 75 centigrams, followed by a second injection of 60 centigrams and a third of 50 centigrams —a total of 185 centigrams (27.75 grains). He has applied this dosage in the clinic and has never observed symptoms of intolerance or intoxication.

The writer ascribes this prophylactic action of calomel and atoxyl to the fact that the pale spirochete does not adapt itself at once to the human organism, and some time elapses after its invasion before it proliferates to any extent. For this reason he thinks the prophylaxis of syphilis is a comparatively easy matter. Metchnikoff (Presse médicale, October 2, 1907; Journal of the American Medical Association, November 2, 1907).

TONSILS, ENLARGED.

Latent tuberculosis was found in five out of fifty cases of enlarged tonsils by the writer. He thinks that the tonsils are organs of defense, and if called on for defensive action too frequently they become enlarged. In case of interference with breathing or frequent catarrhs or general symptoms from the enlarged tonsils, their removal is advised under local anæsthesia, not forgetting the treatment of anything abnormal found in the adjacent organs. Tuberculosis in the writer's five cases was disseminated through the tonsils, and there was no appreciable tuberculous lesion elsewhere except a suspi-

cious staccato respiration in one patient, and a complicating middle-ear affection in a boy of 4, with a fistula in the mastoid process. The process in the tonsils was entirely latent and no other tuberculous lesion could be discovered. Lindt (Correspondenzblatt für Schweizer Aerzte, September 15; Journal of the American Medical Association, November 16, 1907).

TUBERCULOUS PERITONITIS, TREATMENT OF.

A number of instances are related by the writer in which he was able to cure the patient by medical measures alone, tapping the effusion and painting the abdomen with iodine and guaiacol, supplemented by hypodermic injection of a solution of 1 gram of iodine and 10 grams of potassium iodide, with 20 grams guaiacol and 80 grams glycerine; in some cases an iodized gelatine preparation was given by the mouth later. The results were good in all the cases related. Almost a specific action is ascribed to iodine in tuberculosis affections. In one severe case recovery followed tapping and insufflation of heated air into the abdominal cavity, supplemented by a compressing bandage and administration of iodized gelatine. In another very severe case, a girl of 16, no benefit was derived from medical measures, and the peritoneum was drained and wiped dry through a median incision about three inches long. Typical tuberculous granulations were found disseminated over the peritoneum and intestines. After the abdomen was sutured the iodine and guaiacol preparations were resumed, with prompt recovery to date, a year later. A. Bussi (Gazzetta degli Ospedali, September 29, 1907; Journal of the American Medical Association, November 9, 1907).

URETHRA, STRICTURE OF THE.

Electrolysis and divulsion are methods of treatment which should both be abandoned in stricture of the urethra. Internal urethrotomy is the only method of treatment by which an important number of cures can be obtained. It is an operation involving but little danger. Its application should be restricted to strictures within the first five inches of the canal, unless external perineal urethrotomy is done in combination with it.

For strictures of the deeper part of the canal, gradual dilatation is the best form of treatment if constitutional disturbance does not rise in connection with its employment, and if the urethra for a reasonable length of time maintains the caliber to which it has been expanded by the instruments. For the cases in which the strictures of the deep urethra recontract rapidly after dilatation, or those in which constitutional disturbances arise in the course of its employment, also for the resistant or impassable strictures of the deep urethra, in all of which conditions gradual dilatation is useless, external perineal urethrotomy, or internal urethrotomy combined with the external incision in the perineum, is the safest and most efficient method of treatment.

External perineal urethrotomy is the only operation that should be applied in cases of stricture accompanied by urinary extravasation. Resection of the strictured part of the canal should be selected in cases of intractable, very dense strictures of the perineal part of the canal. F. S. Watson (Boston Medical and Surgical Journal, October 24, 1907).

Book Reviews

GYNECOLOGY AND ABDOMINAL SURGERY. In Two Large Octavos. Edited by Howard A. Kelly, M.D., Professor of Gynecologic Surgery at Johns Hopkins University; and Charles P. Noble, M.D., Clinical Professor of Gynecology at the Woman's Medical College, Philadelphia. Volume 1. Large Octavo Volume of 851 Pages, with 405 original Illustrations by Mr. Hermann Becker and Mr. Max Brodel. Per volume: Cloth, $8.00, net; Half Morocco, $9.50, net. W. B. Saunders Company, Philadelphia and London, 1907.

The review of the first volume of a work on gynecology and abdominal surgery is here presented. The prominence of the editors should be sufficient to create for it a large demand, even without taking into consideration the high standard of the book. The authors include men of note, and are undoubtedly recognized authorities in their departments.

The chapters are usually opened with a little historical sketch, which is intended mostly to show the part that American surgeons have taken in the development of gynecology and abdominal surgery. The foot-notes include many references to work of recognized value.

The first chapter is a discussion, by Kelly, of gynecologic technic. The author's vast experience certainly fits him well to present this subject in the most improved style and up-to date manner. Much emphasis is placed on proper sterilization. Preparation of ligatures and sutures is also carefully considered.

In the next two chapters bacteriology and the pathology of the reproductive organs are well treated. Under the latter heading the illustrations, especially the histological, are superb.

A chapter of 117 pages on medical gynecology follows, and is especially designed to satisfy the wants of the general practitioner, although many of the points presented are of such value as to be of marked service to the surgeon in his office work.

Non-plastic operations of the vulva and vagina are briefly considered, followed by a chapter on the plastic operations on the perineum, vagina, and cervix; curettage of the uterus, and inversion of the uterus. Cuts of several instruments are given, and various operations of importance are rather profusely illustrated. Especially is this noted in regard to the operations on the perineum.

Under the heading of combined operations, Edebohls writes of the various operations which are now being done at one sitting, whereas fifteen years ago they were scarcely mentioned.

In discussing the diseases of the bladder and the urethra, Hunner gives considerable attention to cystoscopy, outlines the technic, and gives a few reasons for unsatisfactory results or absolute failures. Kelly cites some very interesting cases of vesical fistulæ, and relates the resourcefulness manifested by some surgeons in an effort to correct this deformity.

The remaining pages are taken up with the consideration of the various abdominal and vaginal operations which are considered within the realm of gynecology. The careful preparation of the patient for the operation is strongly advocated. The character and location of the incision are described, and the dangers likely to be encountered are pointed out. The practical manner of inserting the various sutures for the proper closing of the abdominal wound is also duly considered.

The work should prove a decided favorite, not only among the gynecologists, but the general practitioners as well.—R. B. S.

PRACTICAL FEVER-NURSING. By Edward C. Register, M.D., Professor of the Practice of Medicine in the North Carolina Medical College. Octavo Volume of 352 Pages, Illustrated. Cloth, $2.50 net. W. B. Saunders Company, Philadelphia and London, 1907.

The author states in the preface that the object of this volume is to present to nurses a working text-book that will completely cover the field of practical nursing.

After carefully reviewing the contents, we feel that the primary object has been lost sight of, and that the work has developed into a treatise on general medicine. We cannot see how it is going to benefit the patient if the nurse should have even a thorough knowledge of bacteriology or of pathology, since the management and treatment of the case are usually directed by the physician. And then, what influence will it have on practical fever-nursing for the nurse to know that Jenner in 1798 advocated vaccination, or that Pasteur in 1880 showed that the virulence of the bacteria causing cholera could be modified by artificial means? How is the nurse going to prove of greater service to her patient with the knowledge that infarcted areas in the lungs are not an uncommon condition in typhoid fever, or that phlegmasia alba dolens is not a rare manifestation in the later stages of this disease?

In the discussion of typhoid fever, the author devotes half of the chapter of 81 pages to general symptomatology, which we are inclined to think is too much under the circumstances. The characteristic typhoid stool is described, but no method for its disinfection is given under this heading. Other diseases are described in turn, but usually along lines followed by most text-books of medicine, and hardly from the nurse's standpoint.

Even with the abundance of matter contained in this book which is of little benefit to the nurse in her practice, there still remains much which should interest her and be of great service in her care of the patient and the general management of the case.—R. B. S.

A Compend of Operative Gynecology: Based on Lectures Delivered by William Seaman Bainbridge, M.D., Adjunct Professor of Operative Gynecology on the Cadaver, New York Post-Graduate Medical School and Hospital. Compiled, with Additional Notes, in Collaboration with Harold D. Meeker, M.D., Instructor in Operative Gynecology on the Cadaver, New York Post-Graduate Medical School and Hospital. 12mo. Cloth, 76 pages. Price, $1.00, net. The Grafton Press, New York City.

This small compend of 66 pages is intended as an aid to the students taking the course in operative gynecology in the New York Post-Graduate Medical School and Hospital. It is based upon the lectures delivered by Dr. Bainbridge. Many of the operations are briefly described and are necessarily incomplete. The book fulfills all that is claimed for it in the title page, and should be of much assistance in the course mentioned above.—R. B. S.

Syllabus of Lectures on Human Embryology: An introduction to the study of Obstetrics and Gynæcology for Medical Students and Practitioners; with a Glossary of Embryological Terms. By Walter Porter Manton, M.D., Professor of Clinical Gynæcology and Professor Adjunct of Obstetrics in the Detroit College of Medicine; Fellow of the Zoölogical Society of London, of the Michigan Academy of Sciences, etc., etc. Third Edition. Revised and Enlarged. Illustrated with a colored frontispiece and numerous outline drawings. 12mo, 136 Pages; Interleaved throughout for adding notes. Bound in Extra Cloth. Price, $1.25, net. F. A. Davis Company, 1914-16 Cherry Street, Philadelphia, Pa.

The changes noted in the new edition of this syllabus are the revision of the text and the addition of new matter. The same general plan has been adhered to as in the first edition. Since this work is intended merely as an outline guide for medical students and practitioners in the study of embryology, the text is necessarily brief; but references in the foot-notes to authoritative works allow one to continue the study of this branch, if desired. The book is interleaved, allowing the taking of notes. The illustrations, as a rule, are crude, and are purely diagrammatic. Practical work in embryology is outlined toward the end of the book, which chapter is followed by the glossary of some of the words and terms used in the study of this subject.

The necessity for a third edition should be ample recommendation for the continued popularity of this book.—R. B. S.

THE RE-EDUCATION OF CO-ORDINATION BY MOVEMENTS. With Special Reference to Locomotor Ataxy. Accompanied by Mounted Charts for the Movement Exercises. By Arthur G. Dampier-Bennett, M.R.C.S., L.R.C.P. (Lond.), Kingstown, Co. Dublin. Price, 10 shillings sixpence. John Wright & Co., Bristol; Simpkin, Marshall, Hamilton, Kent & Co., Ltd., London.

The book under review is brief to a nicety, consisting of 15 small pages, setting forth exactly the movements recommended, and along with this is a mounted chart giving four aspects: (1) hand exercises, (2) those for the foot, (3) for the foot, (4) for the hand. This is an exceedingly practical method of training the ataxic patient in fundamental movements which it is essential for him to acquire. It is a good deal simpler than Fraenkel's method, and yet it would seem to be of equal efficacy, especially if the movements are executed with conscientious accuracy and deliberation. It will prove of great assistance to the neurologist, by furnishing him a practical method of guidance for his patient in the most essential means of relief, namely: motor education.—J. M. T.

TEXT-BOOK OF DISEASES OF THE SKIN. By Arthur van Harlingen, Ph.B., M.D. Fourth Edition, thoroughly Revised and Re-arranged, with 102 Illustrations. $3.00. P. Blakiston's Son & Co., Philadelphia, 1907.

The subjects in this excellent text-book, which have hitherto been exhibited alphabetically, are now classified according to the method generally adopted by American teachers. The author has made use of current text-books for some of his additions, and acknowledges personal communications from such leading men as Louis A. Duhring and Henry W. Stelwagon. The book in its previous editions is so well known that it would be superfluous to make any special comment upon the author's views, but perhaps it would be well to give his classification: (1) Hyperæmias, (2) Inflammations, (3) Hæmorrhages, (4) Hypertrophies, (5) Atrophies, (6) New Growths, (7) Neuroses, (8) Diseases of the Appendages, (9) Parasitic Affections. All those who, like the reviewer, have enjoyed the benefits of the singularly clear, exact, and practical teachings of this authority, will welcome any opportunity to learn from him further. It is a satisfaction to have acted as the clinical assistant, for some years, of a man who is so clearly a master of his subject in all its essential details. The book, while larger than before, is still small enough to be more useful to the general practitioner than are, often times, more extensive treatises.—J. M. T.

Books and Monographs Received

The Editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

"Surgery: Its Principles and Practice." By W. W. Keen.——"Manual of Diseases of the Nose, Throat, and Ear." By E. B. Gleason.——"Practical Fever Nursing." By E. C. Register.——"Diseases of the Intestines and Peritoneum." By Herman Nothnagel.——"Treatment of Diseases of Children." By C. G. Kerley.——"Gynæcology and Abdominal Surgery." By H. A. Kelly and C. P. Noble.——"Five Hundred Surgical Suggestions." Surgical Publishing Co.——"Human Anatomy." By G. A. Piersol.——"Diseases of the Skin." By A. Van Harlingen.——"Stories of a Country Doctor." By King.——"The Perpetual Visiting and Pocket Reference Book, Including Information in Emergencies from Standard Authors." J. H. Chambers & Co., St. Louis, Mo.——"Text-book of Physiology." By Isaac Ott.——"Some Unusual Ocular Manifestations of Gonorrhœa." By William Campbell Posey, Philadelphia. 1907.——"Unusual Success from Iridotomy in Eyes Practically Blind from Irido-cyclitis and Complicated Cataract." By William Campbell Posey, Phila-

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